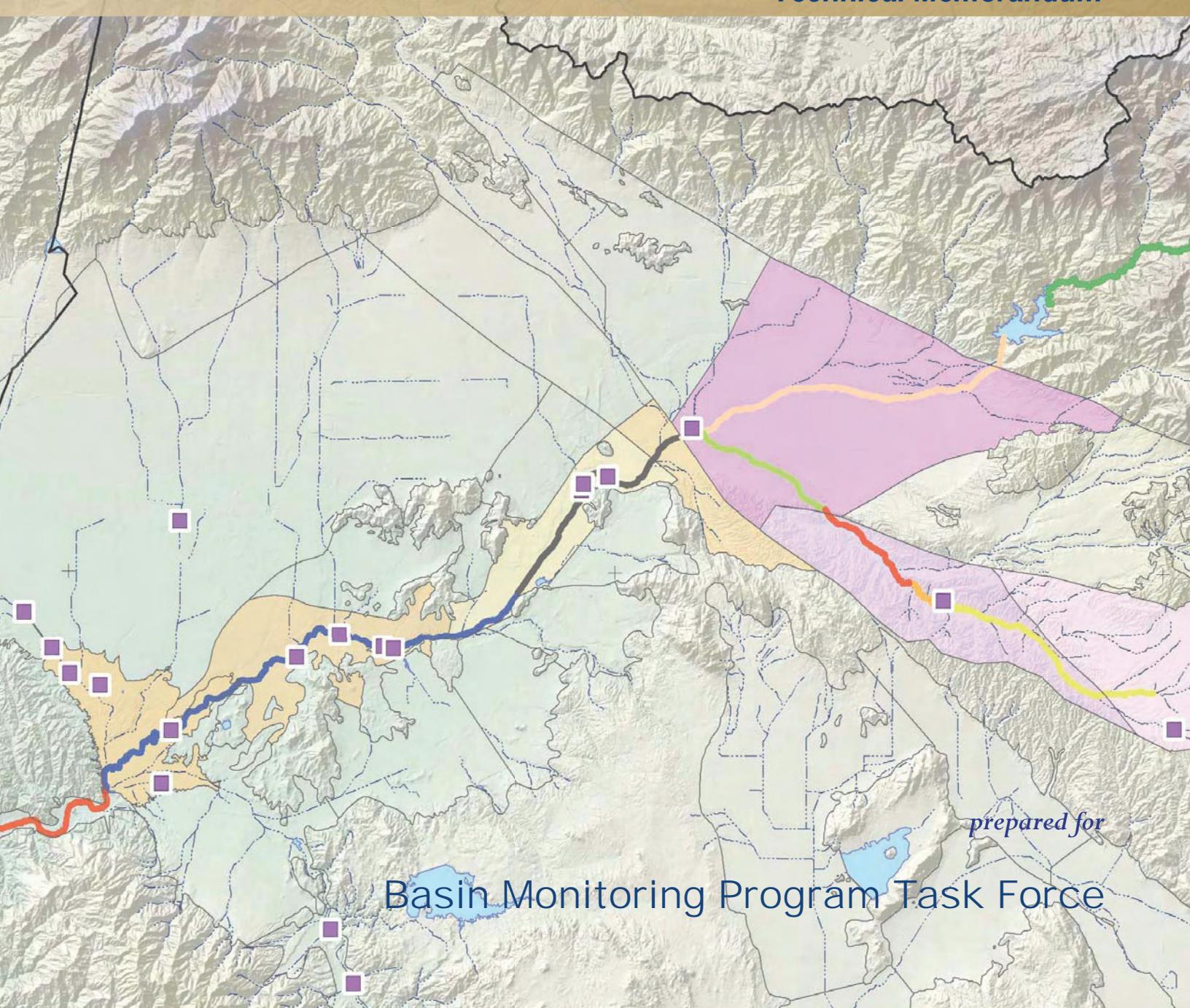


2004 Basin Plan Amendment Required Monitoring and Analyses

**Addendum to the 2008 Santa Ana River
Wasteload Allocation Model Report
Scenario 7**

Technical Memorandum



July 2010



WILDERMUTH
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Background and Introduction

The Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) states the need to develop and periodically update a wasteload allocation for the upper Santa Ana River watershed:

Wasteload allocations for regulating discharges of TDS and total inorganic nitrogen (TIN) to the Santa Ana River, and thence to groundwater management zones recharged by the River, are an important component of salt management for the Santa Ana Basin. As described earlier, the Santa Ana River is a significant source of recharge to groundwater management zones underlying the River and, downstream, to the Orange County groundwater basin. The quality of the River thus has a significant effect on the quality of the Region's groundwater, which is used by more than 5 million people. Control of River quality is appropriately one of the Regional Board's highest priorities.

Sampling and modeling analyses conducted in the 1980's and early 1990's indicated that the TDS and total nitrogen water quality objectives for the Santa Ana River were being violated or were in danger of being violated. Under the Clean Water Act (Section 303(d)(1)(c); 33 USC 466 et seq.), violations of water quality objectives for surface waters must be addressed by the calculation of the maximum wasteloads that can be discharged to achieve and maintain compliance. Accordingly, TDS and nitrogen wasteload allocations were developed and included in the 1983 Basin Plan. The nitrogen wasteload allocation was updated in 1991; an updated TDS wasteload allocated was included in the 1995 Basin Plan when it was adopted and approved in 1994/1995.

The wasteload allocations distribute a share of the total TDS and TIN wasteloads to each of the discharges to the River or its tributaries. The allocations are implemented principally through TDS and nitrogen limits in waste discharge requirements issued to municipal wastewater treatment facilities (Publicly Owned Treatment Works or POTWs) that discharge to the River, either directly or indirectly. Nonpoint source inputs of TDS and nitrogen to the River are also considered in the development of these wasteload allocations [...].

Because of the implementation of these wasteload allocations, the Orange County Water District wetlands and other measures, the TDS and TIN water quality objectives for the Santa Ana River at Prado Dam are no



longer being violated, as shown by annual sampling of the River at the Dam by Regional Board staff. However, as part of the Nitrogen/TDS Task Force studies to update the TDS/nitrogen management plan for the Santa Ana Basin, a review of the TDS and TIN wasteload allocations initially contained in this Basin Plan was conducted [in 2002]. In part, this review was necessary in light of the new groundwater management zones and TDS and nitrate-nitrogen objectives for those zones recommended by the N/TDS Task Force (and now incorporated in Chapters 3 and 4). The wasteload allocations were evaluated and revised to ensure that the POTW discharges would assure compliance with established surface water objectives and would not cause or contribute to violation of the groundwater management zone objectives [...]. (RWQCB, 2008, p. 5-27 to 5-28)

In 2002, Wildermuth Environmental, Inc. (WEI) conducted the wasteload allocation analysis (WEI, 2002). To conduct the analysis, WEI developed and used a numerical computer-simulation model of surface water flow and quality known as the Wasteload Allocation Model (WLAM). The WLAM simulates the flow and quality (TDS and TIN) of the Santa Ana River and its tributaries on a daily time-step as waters commingle from POTW discharge, rainfall/runoff, and rising groundwater. The WLAM also simulates the volume and quality of streambed recharge of the Santa Ana River and its tributaries to the underlying groundwater management zones. Nitrogen losses are simulated in the surface water as a travel-time-dependent, first-order decay function, and in the streambed recharge by applying the 25% and 50% nitrogen-loss coefficients. The daily WLAM results are then post-processed to develop volume-weighted TDS and TIN concentration statistics for surface water and streambed recharge to the groundwater management zones. These statistics are then compared to the relevant surface and groundwater quality objectives (and to the current ambient quality) to determine whether any changes are necessary in TDS and TIN regulation.

In the 2002 effort, the WLAM was used to evaluate two scenarios that represented a reasonable range for future (2010) POTW wastewater production, reuse, and discharge. POTW discharges were held constant during each simulation, but to account for variations in rainfall/runoff, the WLAM was run over a 50-year historical period of daily precipitation (1950-1999). TDS and TIN concentrations in POTW discharges were held constant during each simulation and were generally based on the wasteload allocation in the 1995 Basin Plan. Analysis of the WLAM results demonstrated that for both scenarios the TDS and TIN concentrations in the Santa Ana River would not exceed the surface-water objectives at Prado Dam, nor would the TDS and TIN concentrations of streambed recharge to the Chino-South and Riverside-A management zones exceed the objectives. However, the analysis did indicate that the TDS and TIN concentrations of streambed recharge to the San Timoteo and Beaumont management zones would be higher than the objectives, causing stakeholders in these regions to propose less stringent groundwater-quality objectives for those management zones based on a “maximum benefit” argument.

In 2008, the Basin Monitoring Program Task Force (BMPTF) contracted with WEI to update the wasteload allocation to account for changing plans and conditions in the watershed. Additional data and information had been collected since 2002, which were used to improve the model and its calibration. This time, six scenarios were developed



to represent a reasonable range of future (2010 and 2020) POTW wastewater production, reuse, and discharge, as well as the stormwater conservation measures being contemplated at the Seven Oaks Dam.

WEI ran the WLAM for these six scenarios and, in May 2009, completed the final *2008 Santa Ana River Wasteload Allocation Model Report* (WEI, 2009). The report concluded that the nitrate-nitrogen concentration of streambed recharge to the Chino-South management zone will exceed its objective under the existing wasteload allocation in the Basin Plan. Since no assimilative capacity exists for nitrate-nitrogen in the Chino-South management zone, the Regional Board and the BMPTF desired additional WLAM simulations under an adjusted wasteload allocation to explore what changes were needed to comply with the nitrate-nitrogen objective in Chino-South. In addition, many POTWs wanted to use updated planning information for recycled water reuse and discharge in these new WLAM simulations.

In June 2009, the BMPTF contracted WEI to develop a new WLAM scenario (Scenario 7), to perform a series of simulations—based on Scenario 7—that represent the range of reasonable conditions, and to summarize the results. This technical memorandum fulfills that contract and is an addendum to the *2008 Santa Ana River Wasteload Allocation Model Report*.

Scenario 7

Each POTW provided planning information for 2010 and 2020. This planning information forms the basis for Scenario 7 and is intended to represent the range of expected POTW behavior over the next 10 years, which may span two or more cycles of NPDES permit renewals.

Table 1 lists the planning information for each POTW, including the design capacity of the plant, the expected plant production, the portion of the plant production that will be reused, and the portion of the plant production that will be discharged to the Santa Ana River or one of its tributaries. Figure 1 shows the POTW discharge locations. Table 1 also includes notes for each POTW, describing the reuse plans in more detail and how those plans will affect discharge over an annual cycle. For example, if a POTW's reuse plans are for outdoor irrigation, the demand for the recycled water will vary over the year based on evapotranspiration rates and, hence, so will discharge. Conversely, if a POTW's reuse plans are for artificial recharge, reuse is not dependent on evapotranspiration, and reuse and discharge will occur at constant rates. Annual variations in reuse and discharge, where applicable, were included in the computer simulations described below.

In total, six WLAM simulations were run: three simulations for 2010 and three simulations for 2020. Three simulations were run for each year to represent the potential range of POTW discharge. Table 2 describes how the planning information in Table 1 was used as input data for the simulations.

Simulation 7a assumes the planning conditions for plant production, reuse, and discharge in 2010, as provided by the agencies and described in Table 1. The intent here was to simulate discharge conditions with full implementation of the planned reuse



projects.

Simulation 7b assumes 50% of the planned reuse for 2010 and the associated increase in discharge. The intent here was to simulate discharge conditions when planned reuse projects are only partly implemented and/or are temporarily shutdown for maintenance and/or emergencies.

Simulation 7c assumes no reuse for 2010, and discharge occurs at the full design capacities of the POTWs. The intent here was to simulate the maximum discharge condition.

Simulations 7d, 7e, and 7f repeat the same assumptions and logic as **7a, 7b, and 7c**, respectively, except they use 2020 planned conditions.

With the exception of the City of Riverside's RWQCP, the TDS and TIN concentrations associated with the POTW discharges were simulated using the wasteload allocation in the current Basin Plan (RWQCB, 2008). For the City of Riverside's RWQCP, the current wasteload allocation for TIN is 13 mg/L-N for discharge less than 38 mgd and 10 mg/L-N for discharge greater than 38 mgd. As discussed above, prior WLAM simulations indicated that the nitrate-nitrogen concentration of streambed recharge to the Chino-South management zone will exceed the nitrate-nitrogen objective under the current wasteload allocation. In all Scenario 7 simulations, the TIN concentration for the City of Riverside's RWQCP effluent was reduced to 10 mg/L-N for all discharge to see if this change would result in compliance with the nitrate-nitrogen objective in Chino-South.

Results for Scenario 7

Tables 3 and 4 summarize the TDS and TIN results for the six Scenario 7 WLAM simulations. The results are fully documented in Appendix A as tables and time-series charts.

In Tables 3 and 4, the model results are summarized by the compliance metric for the surface water and groundwater bodies that are affected by POTW discharges. The *compliance metric* is the method that the BMPTF uses to summarize the results of the WLAM for comparison to relevant water quality objectives and current ambient quality estimates. For example, the TDS objective for Reach 3 of the Santa Ana River is 700 mg/L as measured by laboratory analyses of grab samples of total flow at Below Prado during the month of August. The WLAM generates daily estimates of flow and quality at Prado Dam. These daily estimates were used to compute the monthly volume-weighted average TDS concentration for each August over the 50-year simulation. The maximum of the 50 monthly averages for TDS is the compliance metric. This compliance metric for Reach 3 was computed for all six Scenario 7 simulations, and the results are listed in Table 3.

The surface water compliance metrics are based on the monitoring programs and methods used by the Regional Board to determine compliance with the Reach 2 and Reach 3 objectives for the Santa Ana River at Prado Dam (i.e. at the surface water monitoring station at Below Prado Dam). The compliance metric for groundwater is based on the 10-year volume-weighted running average of TDS and TIN concentrations in streambed recharge. The maximum of this 10-year running average over the 50-year



simulation is the compliance metric. The compliance metric for groundwater was agreed upon by the BMPTF and the Regional Board at the November 18, 2009 BMPTF meeting.

For streambed recharge to groundwater, it is important to note that the model results are only representative of those reaches of the Santa Ana River and its tributaries where wastewater discharges can flow, commingle with other waters, and percolate to groundwater. Other stream reaches, where wastewater is absent, were excluded from the computation of the compliance metrics. For example, in the Beaumont management zone, streambed recharge and quality were only computed for those reaches downstream of wastewater effluent discharge locations; stormwater that percolates in the unlined reaches upstream of the discharge locations was not included in the computation of the compliance metrics.

Interpretations and Use of the WLAM Results

Tables 3 and 4 show the water quality objectives, the current (2006) ambient water quality, and the magnitude of assimilative capacity, if any, for each surface water and groundwater body affected by POTW discharge (WEI, 2008). This section compares the objectives, current ambient quality, and assimilative capacity findings to the WLAM results, and discusses the regulatory implications.

Surface Water

The Reach 2 and Reach 3 objectives at Prado Dam protect the beneficial uses of the Santa Ana River in the Orange County Basin—the primary use being groundwater recharge (GWR). Currently, the Regional Board does not recognize the existence of assimilative capacity for TDS or nitrogen in the Santa Ana River at Prado Dam, so it cannot permit POTW discharges that will lead to an exceedance of the water quality objectives.

The Reach 3 TDS and total nitrogen objectives are 700 mg/L and 10 mg/L, respectively, at Prado Dam during the month of August. In all six Scenario 7 WLAM simulations, the maximum flow-weighted average TDS and total nitrogen concentrations in the Santa Ana River at Prado Dam did not exceed the Reach 3 objectives during August (see Tables 3 and 4).

The Reach 2 TDS objective is 650 mg/L at Prado Dam as a 5-year moving average of the annual flow-weighted average TDS concentration. Reach 2 does not have a nitrogen objective. In all six Scenario 7 WLAM simulations, the maximum 5-year moving average of the annual flow-weighted average TDS concentration did not exceed the Reach 2 TDS objective (see Table 3).

The POTWs that primarily affect the flow and quality of the Santa Ana River at Prado Dam include the Rialto WWTP; the RIX Facility; the Riverside RWQCP; the March WWRF (proposed); IEUA plants RP-1, RP-4, RP-5, and Carbon Canyon; the WRCRWA WTP; Corona WWTPs #1 and #3; the Lee Lake Water District WWTP; the EVMWD Regional WWRP; and EMWD discharge to Temescal Creek. The WLAM results indicate that under all discharge conditions simulated for these POTW plants, the TDS and total nitrogen objectives for Reach 2 and Reach 3 will not be exceeded and the wasteload



allocation described by Scenario 7 will be protective of beneficial uses in the Orange County Basin.

Groundwater

The TDS and nitrate-nitrogen objectives for the groundwater management zones were based on an analysis of historical groundwater quality in order to comply with the State's Antidegradation Policy (SWRCB Resolution 68-16). The objectives were reviewed by the Regional Board to ensure that they are protective of beneficial uses—the most sensitive use typically being municipal drinking water supply (MUN). Currently, the Regional Board recognizes the existence of assimilative capacity for TDS and nitrate-nitrogen in some of the management zones that are affected by POTW discharges (see Tables 3 and 4). The assimilative capacity findings are significant from a regulatory perspective. The Basin Plan explains how the Regional Board regulates POTW discharges (and other discharges) to groundwater management zones with assimilative capacity:

[...] If there is assimilative capacity in the receiving waters for TDS, nitrogen or other constituents, a waste discharge may be of poorer quality than the objectives for those constituents for the receiving waters, as long as the discharge does not cause violation of the objectives and provided that antidegradation requirements are met. However, if there is no assimilative capacity in the receiving waters, [...] the numerical limits in the discharge requirements cannot exceed the receiving water objectives or the degradation process would be accelerated. This rule was expressed clearly by the State Water Resources Control Board in a decision regarding the appropriate TDS discharge limitations for the Rancho Caballero Mobile Home Park located in the Santa Ana Region (Order No. 73-4, the so- called "Rancho Caballero decision") [...].

In regulating waste discharges to waters with assimilative capacity, the Regional Board will proceed as follows. (see also Section III.B.6., Special Considerations – Subsurface Disposal Systems).

If a discharger proposes to discharge wastes that are at or below (i.e., better than) the current ambient TDS and/or nitrogen water quality, then the discharge will not be expected to result in the lowering of water quality, and no antidegradation analysis will be required. TDS and nitrogen objectives are expected to be met. Such discharges clearly implement the Basin Plan and the Board can permit them to proceed. Of course, other pertinent requirements, such as those of the California Environmental Quality Act (CEQA) must also be satisfied [...].

If a discharger proposes to discharge wastes that exceed the current ambient TDS and/or nitrogen quality, then the Board will require the discharger to conduct an appropriate antidegradation analysis. The purpose of this analysis will be to demonstrate whether and to what extent the proposed discharge would result in a lowering of ambient water quality in affected receiving waters. That is, to what extent, if any, would the discharge use available assimilative capacity. If the discharger demonstrates that no lowering of water quality would occur, then



antidegradation requirements are met, water quality objectives will be achieved, and the Regional Board can permit such discharges to proceed. If the analysis indicates that a lowering of current ambient water quality would occur, other than on a minor or temporally or spatially limited basis, then the discharger must demonstrate that: (1) beneficial uses would continue to be protected and the established water quality objectives would be met; and (2) that the resultant water quality would be consistent with maximum benefit to the people of California; and, (3) that best practicable treatment or control has been implemented. Best practical treatment or control means levels that can be achieved using best efforts and reasonable control methods. For affected receiving waters, the discharger must estimate the amount of assimilative capacity that would be used by the discharger. The Regional Board would employ its discretion in determining the amount of assimilative capacity that would be allocated to the discharger. Rather than allocating assimilative capacity, the Regional Board may require the discharger to mitigate or offset discharges that would result in the lowering of water quality.

Again, discharges to waters without assimilative capacity for TDS and/or nitrogen must be held to the objectives of the affected receiving waters (with the caveat identified in footnote 3 previous page). In some cases, compliance with management zone TDS objectives for discharges to waters without assimilative capacity may be difficult to achieve. Poor quality water supplies or the need to add certain salts during the treatment process to achieve compliance with other discharge limitations (e.g., addition of ferric chloride) could render compliance with strict TDS limits very difficult. The Regional Board addresses such situations by providing dischargers with the opportunity to participate in TDS offset programs, such as the use of desalters, in lieu of compliance with numerical TDS limits. These offset provisions are incorporated into waste discharge requirements. Provided that the discharger takes all reasonable steps to improve the quality of the waters influent to the treatment facility (such as through source control or improved water supplies), and provided that chemical additions are minimized, the discharger can proceed with an acceptable program to offset the effects of TDS discharges in excess of the permit limits.

Similarly, compliance with the nitrate-nitrogen objectives for groundwaters specified in this Plan would be difficult in many cases. Offset provision may apply to nitrogen discharges as well. An alternative that dischargers might pursue in these circumstances is revision of the TDS or nitrogen objectives, through the Basin Plan amendment process. Consideration of less stringent objectives would necessitate comprehensive antidegradation review, including the demonstrations that beneficial uses would be protected and that water quality consistent with maximum benefit to the people of the State would be maintained. As discussed in Chapter 4 and later in this Chapter, a number of dischargers have pursued this “maximum benefit objective” approach, leading to the inclusion of “maximum benefit” objectives and implementation strategies in this Basin Plan. Discharges to areas where the “maximum benefit”



objectives apply will be regulated in conformance with these implementation strategies. Any assimilative capacity created by the maximum benefit programs will be allocated to the parties responsible for implementing them. (RWQCB, 2008, p. 5-20 to 5-22)

The following discussion addresses each groundwater management zone, including the WLAM results and their regulatory implications.

Chino-South Management Zone. The TDS and nitrate-nitrogen objectives for the Chino-South management zone are 680 mg/L and 4.2 mg/L. The current (2006) ambient TDS and nitrate-nitrogen concentrations are 940 mg/L and 25.7 mg/L; hence, there is no assimilative capacity in Chino-South. The POTW discharges that affect Chino-South groundwater quality are from the Rialto WWTP, the RIX Facility, the Riverside RWQCP, and the March WWRF (a proposed discharge). The WLAM results shown in Tables 3 and 4 indicate that, under all discharge conditions simulated for these POTWs, the compliance metrics for streambed recharge do not exceed the TDS and nitrate-nitrogen objectives for Chino-South; hence, the wasteload allocation, as described in all variations of Scenario 7, will be protective of beneficial uses in the Chino-South management zone.

Riverside-A Management Zone. The TDS and nitrate-nitrogen objectives for the Riverside-A management zone are 560 mg/L and 6.2 mg/L. The current (2006) ambient TDS and nitrate-nitrogen concentrations are 440 mg/L and 4.9 mg/L; hence, there is assimilative capacity in Riverside-A (120 mg/L for TDS and 1.3 mg/L for nitrate-nitrogen as of 2006). The POTW discharges that primarily affect Riverside-A groundwater quality are from the Rialto WWTP and the RIX Facility. The WLAM results shown in Tables 3 and 4 indicate that, under all discharge conditions simulated for these POTWs, the compliance metrics for streambed recharge exceed the current ambient TDS and nitrate-nitrogen concentrations in Riverside-A. In this case, the Regional Board may require the Rialto WWTP and the RIX Facility to conduct an appropriate antidegradation analysis in Riverside-A prior to approving the wasteload allocation as described in all variations of Scenario 7.

Colton Management Zone. The TDS and nitrate-nitrogen objectives for the Colton management zone are 410 mg/L and 2.7 mg/L. The current ambient TDS and nitrate-nitrogen concentrations are 450 mg/L and 2.9 mg/L; hence, there is no assimilative capacity in Colton. Discharges from upstream POTWs (YVWD and Beaumont) do not typically reach the Colton management zone except during periods of high storm flow. The WLAM results shown in Tables 3 and 4 indicate that, under all discharge conditions simulated for these POTW plants, the compliance metrics for streambed recharge do not exceed the TDS and nitrate-nitrogen objectives for Colton; hence, the wasteload allocation, as described in all variations of Scenario 7, will be protective of beneficial uses in the Colton management zone.

Bunker Hill-B Management Zone. The TDS and nitrate-nitrogen objectives for the Bunker Hill-B management zone are 330 mg/L and 7.3 mg/L. The current (2006) ambient TDS and nitrate-nitrogen concentrations are 280 mg/L and 5.4 mg/L; hence, there is assimilative capacity in Bunker Hill-B (50 mg/L for TDS and 1.9 mg/L for nitrate-nitrogen as of 2006). The POTW discharge that primarily affects Bunker Hill-B groundwater quality is from the YVWD WWTP. The WLAM results shown in Tables 3 and 4 indicate that, under the discharge conditions simulated in Scenarios 7c and 7f, the



compliance metrics for streambed recharge exceed the current ambient TDS concentration in Bunker Hill-B. In this case, the Regional Board can approve the wasteload allocation described by Scenarios 7a, 7b, 7d, and 7e, but may require the YVWD to conduct an appropriate antidegradation analysis for TDS in Bunker Hill-B prior to approving the wasteload allocation as described in Scenarios 7c and 7f.

San Timoteo Management Zone. The TDS and nitrate-nitrogen objectives for the San Timoteo management zone are 400 mg/L and 5 mg/L. These are “maximum benefit” objectives, and they were granted to the region’s stakeholders by the Regional Board as part of the stakeholders’ “maximum benefit” demonstration. One purpose of the “maximum benefit” objectives was to create assimilative capacity in the San Timoteo management zone. At present, groundwater quality data are insufficient to estimate current ambient TDS and nitrate-nitrogen concentrations; hence, there is no finding of assimilative capacity in San Timoteo. The POTW discharges that primarily affect San Timoteo groundwater quality are from the YVWD WWTP and Beaumont WWTP #1. The WLAM results shown in Tables 3 and 4 indicate that, under all discharge conditions simulated for these POTWs, the TDS compliance metrics for streambed recharge exceed the San Timoteo TDS objective. The Regional Board has required the “maximum benefit” stakeholders to conduct groundwater sampling and estimate the current ambient quality as soon as possible. Once current ambient quality is estimated, the Regional Board may require the “maximum benefit” stakeholders to conduct an appropriate antidegradation analysis in San Timoteo for TDS (and possibly TIN depending on the current ambient quality in San Timoteo) prior to approving the wasteload allocation as described in all variations of Scenario 7.

Beaumont Management Zone. The TDS and nitrate-nitrogen objectives for the Beaumont management zone are 330 mg/L and 5 mg/L. These are “maximum benefit” objectives, and they were granted to the region’s stakeholders by the Regional Board as part of the stakeholders’ “maximum benefit” demonstration. The current (2006) ambient TDS and nitrate-nitrogen concentrations are 260 mg/L and 1.6 mg/L; hence, there is assimilative capacity in Beaumont (70 mg/L for TDS and 3.4 mg/L for nitrate-nitrogen). The POTW discharge that primarily affects groundwater quality in Beaumont is from the Beaumont WWTP #1. The WLAM results shown in Tables 3 and 4 indicate that under the discharge conditions simulated in Scenarios 7b, 7c, 7e, and 7f, the compliance metrics for streambed recharge exceed the current ambient TDS and/or nitrate-nitrogen concentrations in Beaumont. In this case, the Regional Board can approve the wasteload allocation described by Scenarios 7a and 7d, but must evaluate the stakeholders’ “maximum benefit” demonstration before approving the wasteload allocation described by Scenarios 7b, 7c, 7e, and 7f. The stakeholders conducted an antidegradation analysis for Beaumont as part of their “maximum benefit” demonstration. If the Regional Board finds that the salt loading from the recycled water reuse/recharge assumed in the antidegradation analysis is greater than or equal to the salt loading assumed in Scenarios 7b, 7c, 7e, and 7f, it can approve the wasteload allocation for the Beaumont WWTP #1 as described in all variations of Scenario 7. Otherwise, the Regional Board may require the “maximum benefit” stakeholders to update the antidegradation analysis prior to approving the wasteload allocation for Scenarios 7b, 7c, 7e, and 7f.



Summary

The purpose of this wasteload allocation is to assist the Regional Board in setting appropriate effluent limits for TDS and nitrogen when updating POTW waste discharge requirements (e.g. NPDES permits) through 2020. Table 5 summarizes the wasteload allocation by POTW, as derived from the Scenario 7 WLAM results.

The wasteload allocation consists of maximum TDS and TIN concentration limits and a range of acceptable discharge. If a POTW proposes to discharge outside of the range of acceptable discharge, the Regional Board may request further analysis through additional WLAM simulations. For some POTWs, the acceptable range of discharge comes with qualifications—in particular, the need to conduct appropriate antidegradation analyses prior to receiving wasteload allocation approval from the Regional Board. These qualifications are described in Table 5 and discussed in detail in the previous section entitled Interpretations and Use of the WLAM Results.

Recommendations

We have two very significant recommendations for the BMPTF:

The first is to incorporate the results and interpretations of Scenario 7 into a Basin Plan amendment to update the wasteload allocation for POTWs that discharge to the Santa Ana River or its tributaries.

The second is to re-define the Santa Ana River surface water objectives for TDS and TIN at Prado Dam based on a technical demonstration of their protectiveness of groundwater quality in the Orange County management zone. These surface water objectives were not changed during the N/TDS Study even though the groundwater quality objectives in the Orange County management zone were changed to lower concentrations. WEI contends that the results of this effort would improve regulatory certainty at a key location in the watershed, thereby facilitating better planning for individual water/wastewater agencies and greater cooperation between agencies.

The Santa Ana River Reach 2 and Reach 3 objectives at Prado Dam protect the beneficial uses of the Santa Ana River in the Orange County Basin—the primary use being groundwater recharge. The current Reach 2 objective for TDS is 650 mg/L at Below Prado as a 5-year moving average of the annual flow-weighted average TDS concentration. The current Reach 3 objectives for TDS and total nitrogen are 700 mg/L and 10 mg/L at Below Prado as an August-only average. The TDS and nitrate-nitrogen objectives for the Orange County management zone are 580 mg/L and 3.4 mg/L. There is no assimilative capacity for TDS in Orange County, and only a small amount of assimilative capacity for nitrate-nitrogen (0.4 mg/L as of 2006).

The Regional Board has assumed that the Reach 2 and Reach 3 objectives are protective of the Orange County management zone due to other diluent flows that recharge the Orange County management zone. This assumption is supported by the following empirical evidence: (1) the TDS and total nitrogen concentrations of the Santa Ana River at Prado Dam have typically been at or below the Reach 2 and Reach 3 objectives since about 1978 and (2) the ambient TDS and nitrate-nitrogen concentrations of the Orange County management zone have not shown a significant



trend of degradation since the historical time period used to set the objectives (1954–1973). WEI's opines that this evidence alone does not provide a *conclusive* technical foundation for the protective nature of the Reach 2 and 3 objectives with respect to the new Orange County objectives and that additional analyses should be performed. These analyses will likely require data collection and computer-simulation modeling (discussed below).

The WLAM results indicate that for all Scenario 7 simulations, the TDS compliance metrics for Reach 2 of the Santa Ana River (547–569 mg/L) are lower than the Reach 2 objective (650 mg/L) (see Table 3). These results suggest that the TDS wasteload allocation for POTWs upstream of Prado Dam could be relaxed to some degree and still comply with the Reach 2 TDS objective. This has led some POTWs to request that the Regional Board consider such TDS relaxation in the wasteload allocation. OCWD staff has raised concerns about relaxing TDS concentrations in the wasteload allocation, given that there is no assimilative capacity for TDS in the Orange County management zone.

Though the WLAM results suggest that assimilative capacity may exist in the Santa Ana River at Prado Dam relative to the TDS and nitrate-nitrogen objectives for Reaches 2 and 3, this is not, at present, a technically compelling argument for establishing a finding of assimilative capacity in the Santa Ana River at Prado Dam or for its allocation to upstream POTWs. To achieve a technical foundation for such a finding (or not), a BMPTF effort should be conducted that will result in:

1. New TDS and TIN objectives for the Santa Ana River at Prado Dam that have a scientific basis for their protective nature of the Orange County management zone.
2. Findings of assimilative capacity (or not) for the Santa Ana River at Prado Dam.
3. An equitable distribution of assimilative capacity for the Santa Ana River at Prado Dam, if it exists, to all upstream discharges that affect the water quality of the Santa Ana River at Prado Dam.
4. An equitable revision of the wasteload allocation if assimilative capacity does not exist (i.e. TDS and/or TIN compliance metrics for the Santa Ana River at Prado Dam are higher than the new objectives).
5. A new measure of compliance for the Santa Ana River at Prado Dam that may include monitoring and modeling to estimate the volume-weighted TDS and TIN concentrations of Santa Ana River recharge to the Orange County management zone.

This BMPTF effort will have to account for the following:

1. Not all of the Santa Ana River flows that pass Prado Dam are recharged in the Orange County management zone. Some of these flows, especially during and after large storm events, are “lost” to the ocean. The BMPTF should decide if and how to account for these “lost” flows that do not recharge the Orange County management zone.
2. There are other tributary flows that enter the Santa Ana River downstream of



Prado Dam before being recharged to the Orange County management zone. However, very little water-quality data exists for these flows. The BMPTF should decide if and how to account for these other tributary flows. If the BMPTF decides to account for these flows, a monitoring program should be designed and implemented to quantify the flows and their TDS and TIN concentrations.

3. Other inflows affect TDS and nitrate concentrations in the Orange County management zone, including flow from Santiago Creek and subsurface inflow. The BMPTF should decide if and how to account for these inflows.
4. Computer-simulation modeling will be an important component of this effort. As has been discussed at prior BMPTF meetings, the WLAM and OCWD's newly developed recharge facilities model will need to be used to estimate the volume-weighted TDS and TIN of Santa Ana River recharge to the Orange County management zone.

WEI recommends that this effort employ the same methodology and philosophy of past N/TDS Task Force efforts—a collaborative process where the investigative methods and the regulatory use of the results are agreed upon before the technical work and calculations are completed.

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Table 1
POTW Planning Information Used in Wasteload Allocation Scenario 7

Agency	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 7					Notes on Reuse and Discharge
						TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
San Timoteo Creek											
City of Beaumont ^A Wastewater Treatment Plant #1	2010	8.0	4.0	490	6	490	6	2.5	0.7	1.8	In 2010 and 2020, reuse is for irrigation and/or artificial recharge to the Beaumont management zone. The SWRCB and US Fish and Wildlife Service require the City of Beaumont to discharge at least 1.8 mgd to Cooper's Creek.
	2020	8.0	NA	490	6	490	6	8.0	6.2	1.8	
Yucaipa Valley Water District ^B H. N. Wochholz WTP	2010	8.5	6.7	540	6	540	6	3.8	1.1	2.7	In 2010, reuse is for irrigation only, so discharge to San Timoteo Creek will vary based on seasonal demand. In 2020, all wastewater effluent will be reused for irrigation and artificial recharge. 1.6 mgd of groundwater will be pumped and discharged to San Timoteo Creek to support riparian habitat.
	2020	11.0	NA	540	6	540	6	4.8	4.8	1.6	
Santa Ana River Reach 4											
City of Rialto ^C Rialto Wastewater Treatment Plant	2010	11.7	11.7	490	10	490	10	9.0	0.4	8.6	In 2010 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. There are no plans for artificial recharge of recycled water.
	2020	12.0	NA	490	10	490	10	12.0	2.4	9.6	
San Bernardino/Colton ^D RIX Facility	2010	40.0	64.0	550	10	550	10	40.0	16.0	20.8	Plant Production is RIX Effluent Discharge includes 120% overproduction at RIX. In 2010 and 2020, virtually all reuse is for artificial recharge in the Bunker Hill A management zone, so discharge to the Santa Ana River at RIX is at a constant rate.
	2020	40.0	NA	550	10	550	10	64.0	16.0	44.8	
Santa Ana River Reach 3											
City of Riverside ^E Regional Water Quality Control Plant	2010	40.0	40.0	650	13<38 MGD 10>38 MGD	650	10	34.5	1.5	33.0	In 2010, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. In 2020, reuse is for irrigation and/or artificial recharge to the Colton and Riverside management zones, which will enable the City to reuse and discharge at constant rates.
	2020	46.0	NA	650	13>38 MGD 10>38 MGD	650	10	46.0	10.0	36.0	
Western Municipal Water District ^G March Wastewater Reclamation Facility	2010	3.0	NA	550	6	550	6	3.0	0.7	2.3	In 2010 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. No plans for recycled water recharge.
	2020	5.0	NA	550	6	550	6	5.0	0.7	4.3	
Chino Creek/Cucamonga Creek/Prado Basin											
Inland Empire Utilities Agency ^F RP1 001 Prado	2010	20.0	NA	550	8	550	8	15.0	10.0	5.0	
	2020	20.0	NA	550	8	550	8	15.0	10.0	5.0	
Inland Empire Utilities Agency ^F Carbon Canyon WRP	2010	11.0	9.7	550	8	550	8	11.0	6.0	5.0	
	2020	12.0	NA	550	8	550	8	11.0	8.0	3.0	In 2010 and 2020, reuse is for irrigation and artificial recharge in the Chino-North management zone. Discharge to the Santa Ana River will vary based on seasonal demand for direct uses of recycled water.
Inland Empire Utilities Agency ^F RP-5	2010	15.0	15.0	550	8	550	8	12.0	3.0	9.0	
	2020	16.0	NA	550	8	550	8	12.0	6.0	6.0	
Inland Empire Utilities Agency ^F RP1 002 Cucamonga and RP 4	2010	38.0	NA	550	8	550	8	23.0	13.0	10.0	
	2020	38.0	NA	550	8	550	8	28.0	24.0	4.0	
Western Riverside County ^G Regional Wastewater Authority WTP	2010	8.0	8.0	625	10	625	10	7.2	1.0	6.2	In 2010 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. No plans for recycled water recharge.
	2020	14.0	NA	625	10	625	10	14.0	2.0	12.0	
Temescal Creek											
City of Corona ^H Wastewater Treatment Plant #1	2010	11.5	9.0	700	10	700	10	11.3	7.7	3.6	In 2010 and 2020, reuse is for irrigation and percolation to the Temescal management zone. Discharge to the Santa Ana River will vary based on seasonal demand for direct uses of recycled water.
	2020	14.5	NA	700	10	700	10	11.6	10.1	1.5	
City of Corona ^H Wastewater Treatment Plant #2	2010	-	-	-	-	-	-	-	-	0.0	
	2020	-	-	-	-	-	-	-	-	0.0	Effluent from Plant 2 is percolated to the Temescal management zone at the Lincoln/Cota Ponds.
City of Corona ^H Wastewater Treatment Plant #3	2010	1.0	1.0	700	10	700	10	1.0	0.5	0.5	
	2020	1.0	NA	700	10	700	10	1.0	0.8	0.2	In 2010 and 2020, reuse is for irrigation only, so discharge to Temescal Creek will vary based on seasonal demand for direct uses of recycled water.
Lee Lake Water District ^I Wastewater Treatment Plant	2010	1.58	1.58	650	13	650	13	0.9	0.45	0.45	In 2010 and 2020, reuse is for irrigation only, so discharge to Temescal Creek will vary based on seasonal demand for direct uses of recycled water.
	2020	2.3	NA	650	13	650	13	1.2	0.7	0.5	
Elsinore Valley Municipal Water District ^J Regional WWRP	2010	8.0	8.0	700	13	700	13	7.8	7.3	0.5	In 2010 and 2020, reuse is for irrigation and stabilization of water levels in Lake Elsinore, so discharge to Temescal Creek is assumed to occur at a constant rate.
	2020	12.0	NA	700	13	700	13	13.6	13.1	0.5	
Eastern Municipal Water District ^K (all treatment plants combined)	2010	NA	52.5	650	10	650	10	NA	NA	27.6	Discharge is to Temescal Creek and occurs at a constant rate from November thru April only (six months per year). Permitted discharge is 52.5 mgd as a monthly average.
	2020	NA	NA	650	10	650	10	NA	NA	43.6	

References: A - Mark Wildermuth; B - Joe Zoba; C - William Hunt; D - Val Housel; E - Chandra Johannesson; F - LeAnne Hamilton; G - Linda Garcia; H - Lyndy Lewis; I - Jeff Pape; J - Sudhir Mohleji; K - Jayne Joy

Table 2
Description of Wasteload Allocation Simulations for Scenario 7

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 7						Notes on Reuse and Discharge
						Simulation	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
San Timoteo Creek												
City of Beaumont WWTP #1	2010	8.0	4.0	490	6	Simulation 7a	490	6	2.5	0.7	1.8	In 2010 and 2020, reuse is for irrigation and/or artificial recharge to the Beaumont management zone. The SWRCB and US Fish and Wildlife Service require the City of Beaumont to discharge at least 1.8 mgd to Cooper's Creek. Any discharge in excess of 1.8 mgd is assumed to be evenly split and discharged at DP 007 and 008 for streambed restoration projects and streambed recharge in the Beaumont MZ.
						Simulation 7b	490	6	2.5	0.35	2.2	
						Simulation 7c	490	6	8.0	0.0	8.0	
	2020	8.0	NA	490	6	Simulation 7d	490	6	8.0	6.2	1.8	Any discharge in excess of 1.8 mgd is assumed to be evenly split and discharged at DP 007 and 008 for streambed restoration projects and streambed recharge in the Beaumont MZ.
						Simulation 7e	490	6	8.0	3.1	4.9	
						Simulation 7f	490	6	8.0	0.0	8.0	
YVWD WWTP	2010	8.5	6.7	540	6	Simulation 7a	540	6	3.8	1.1	2.7	In 2010, reuse is for irrigation only, so discharge to San Timoteo Creek will vary based on seasonal demand. For Simulation 7d (2020), all wastewater effluent will be reused for irrigation and artificial recharge, and 1.6 mgd of groundwater will be pumped and discharged to San Timoteo Creek to support riparian habitat. YVWD estimates that the TIN and TDS concentrations for the groundwater will be 7 mg/L and 580 mg/L, respectively. In Scenarios 7e and 7f, groundwater is not pumped, and discharge is from the WWTP.
						Simulation 7b	540	6	3.8	0.55	3.3	
						Simulation 7c	540	6	8.5	0.0	8.5	
	2020	11.0	NA	540	6	Simulation 7d	580	7	4.8	4.8	1.6	In 2010, reuse is for irrigation only, so discharge to San Timoteo Creek will vary based on seasonal demand. For Simulation 7d (2020), all wastewater effluent will be reused for irrigation and artificial recharge, and 1.6 mgd of groundwater will be pumped and discharged to San Timoteo Creek to support riparian habitat. YVWD estimates that the TIN and TDS concentrations for the groundwater will be 7 mg/L and 580 mg/L, respectively. In Scenarios 7e and 7f, groundwater is not pumped, and discharge is from the WWTP.
						Simulation 7e	540	6	4.8	2.4	2.4	
						Simulation 7f	540	6	11.0	0.0	11.0	
Santa Ana River Reach 4												
City of Rialto WWTP	2010	11.7	11.7	490	10	Simulation 7a	490	10	9.0	0.4	8.6	In 2010 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. There are no plans for artificial recharge of recycled water.
						Simulation 7b	490	10	9.0	0.2	8.8	
						Simulation 7c	490	10	11.7	0.0	11.7	
	2020	12.0	NA	490	10	Simulation 7d	490	10	12.0	2.4	9.6	In 2010 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. There are no plans for artificial recharge of recycled water.
						Simulation 7e	490	10	12.0	1.2	10.8	
						Simulation 7f	490	10	12.0	0.0	12.0	
RIX Facility	2010	40.0	64.0	550	10	Simulation 7a	550	10	40.0	16.0	20.8	Design Capacity for RIX is for influent flows. Plant Production is RIX Effluent Discharge includes 120% overproduction at RIX. In 2010 and 2020, virtually all reuse is for artificial recharge in the Bunker Hill A management zone, so discharge to the Santa Ana River at RIX is at a constant rate.
						Simulation 7b	550	10	40.0	8.0	30.4	
						Simulation 7c	550	10	64.0	0.0	64.0	
	2020	40.0	NA	550	10	Simulation 7d	550	10	64.0	16.0	44.8	Design Capacity for RIX is for influent flows. Plant Production is RIX Effluent Discharge includes 120% overproduction at RIX. In 2010 and 2020, virtually all reuse is for artificial recharge in the Bunker Hill A management zone, so discharge to the Santa Ana River at RIX is at a constant rate.
						Simulation 7e	550	10	64.0	8.0	54.4	
						Simulation 7f	550	10	64.0	0.0	64.0	

Table 2
Description of Wasteload Allocation Simulations for Scenario 7

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 7						Notes on Reuse and Discharge
						Simulation	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
Santa Ana River Reach 3												
City of Riverside RWQCP	2010	40.0	40.0	650	13<38 MGD 10>38 MGD	Simulation 7a	650	10	34.5	1.5	33.0	In 2010, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. In 2020, reuse is for irrigation and/or artificial recharge to the Colton and Riverside management zones, which will enable the City to reuse and discharge at constant rates.
						Simulation 7b	650	10	34.5	0.75	33.75	
						Simulation 7c	650	10	40.0	0.0	40.0	
	2020	46.0	NA	650	13<38 MGD 10>38 MGD	Simulation 7d	650	10	46.0	10.0	36.0	
						Simulation 7e	650	10	46.0	5.0	41.0	
						Simulation 7f	650	10	46.0	0.0	46.0	
WMWD March WRF	2010	3.0	NA	550	6	Simulation 7a	550	6	3.0	0.7	2.3	In 2010 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. No plans for recycled water recharge.
						Simulation 7b	550	6	3.0	0.35	2.65	
						Simulation 7c	550	6	3.0	0.0	3.0	
	2020	5.0	NA	550	6	Simulation 7d	550	6	5.0	0.7	4.3	
						Simulation 7e	550	6	5.0	0.35	4.65	
						Simulation 7f	550	6	5.0	0.0	5.0	
Chino Creek/Cucamonga Creek/Prado Basin												
IEUA RP1 001 Prado	2010	20.0	NA	550	8	Simulation 7a	550	8	15.0	10.0	5.0	In 2010 and 2020, reuse is for irrigation and artificial recharge in the Chino-North management zone. Discharge
						Simulation 7b	550	8	15.0	5.0	10.0	
						Simulation 7c	550	8	20.0	0.0	20.0	
	2020	20.0	NA	550	8	Simulation 7d	550	8	15.0	10.0	5.0	
						Simulation 7e	550	8	15.0	5.0	10.0	
						Simulation 7f	550	8	20.0	0.0	20.0	
IEUA CCWRP	2010	11.0	9.7	550	8	Simulation 7a	550	8	11.0	6.0	5.0	
						Simulation 7b	550	8	11.0	3.0	8.0	
						Simulation 7c	550	8	11.0	0.0	11.0	
	2020	12.0	NA	550	8	Simulation 7d	550	8	11.0	8.0	3.0	
						Simulation 7e	550	8	11.0	4.0	7.0	
						Simulation 7f	550	8	12.0	0.0	12.0	

Table 2
Description of Wasteload Allocation Simulations for Scenario 7

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 7						Notes on Reuse and Discharge
						Simulation	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
IEUA RP5	2010	15.0	15.0	550	8	Simulation 7a	550	8	12.0	3.0	9.0	to the Santa Ana River will vary based on seasonal demand for direct uses of recycled water.
						Simulation 7b	550	8	12.0	1.5	10.5	
						Simulation 7c	550	8	15.0	0.0	15.0	
	2020	16.0	NA	550	8	Simulation 7d	550	8	12.0	6.0	6.0	
						Simulation 7e	550	8	12.0	3.0	9.0	
						Simulation 7f	550	8	16.0	0.0	16.0	
IEUA RP1 002 and RP4	2010	38.0	NA	550	8	Simulation 7a	550	8	23.0	13.0	10.0	
						Simulation 7b	550	8	23.0	6.5	16.5	
						Simulation 7c	550	8	38.0	0.0	38.0	
	2020	38.0	NA	550	8	Simulation 7d	550	8	28.0	24.0	4.0	
						Simulation 7e	550	8	28.0	12.0	16.0	
						Simulation 7f	550	8	38.0	0.0	38.0	
WRCRWA WTP	2010	8.0	8.0	625	10	Simulation 7a	625	10	7.2	1.0	6.2	In 2010 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. No plans for recycled water recharge.
						Simulation 7b	625	10	7.2	0.5	6.7	
						Simulation 7c	625	10	8.0	0.0	8.0	
	2020	14.0	NA	625	10	Simulation 7d	625	10	14.0	2.0	12.0	
						Simulation 7e	625	10	14.0	1.0	13.0	
						Simulation 7f	625	10	14.0	0.0	14.0	
Temescal Creek						Simulation 7a	700	10	11.3	7.7	3.6	
City of Corona WWTP #1	2010	11.5	9.0	700	10	Simulation 7b	700	10	11.3	3.85	7.45	
						Simulation 7c	700	10	11.5	0.0	11.5	
						Simulation 7d	700	10	11.6	10.1	1.5	
	2020	14.5	NA	700	10	Simulation 7e	700	10	11.6	5.05	6.55	
						Simulation 7f	700	10	14.5	0.0	14.5	

Table 2
Description of Wasteload Allocation Simulations for Scenario 7

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 7						Notes on Reuse and Discharge
						Simulation	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
Corona WWTP #3	2010	1.0	1.0	700	10	Simulation 7a	700	10	1.0	0.5	0.5	In 2010 and 2020, reuse is for irrigation only, so discharge to Temescal Creek will vary based on seasonal demand for direct uses of recycled water.
						Simulation 7b	700	10	1.0	0.25	0.75	
						Simulation 7c	700	10	1.0	0.0	1.0	
	2020	1.0	NA	700	10	Simulation 7d	700	10	1.0	0.8	0.2	
						Simulation 7e	700	10	1.0	0.4	0.6	
						Simulation 7f	700	10	1.0	0.0	1.0	
LLWD WTP	2010	1.58	1.58	650	13	Simulation 7a	650	13	0.9	0.45	0.45	In 2010 and 2020, reuse is for irrigation only, so discharge to Temescal Creek will vary based on seasonal demand for direct uses of recycled water.
						Simulation 7b	650	13	0.9	0.23	0.68	
						Simulation 7c	650	13	1.6	0.0	1.6	
	2020	2.3	NA	650	13	Simulation 7d	650	13	1.2	0.7	0.5	
						Simulation 7e	650	13	1.2	0.35	0.85	
						Simulation 7f	650	13	2.3	0.0	2.3	
Elsinore Valley MWD RWWRP	2010	8.0	8.0	700	13	Simulation 7a	700	13	7.8	7.3	0.5	In 2010 and 2020, reuse is for irrigation and stablization of water levels in Lake Elsinore, so discharge to Temescal Creek is assumed to occur at a constant rate.
						Simulation 7b	700	13	7.8	3.65	4.15	
						Simulation 7c	700	13	8.0	0.0	8.0	
	2020	13.6	NA	700	13	Simulation 7d	700	13	13.6	13.1	0.5	
						Simulation 7e	700	13	13.6	6.55	7.05	
						Simulation 7f	700	13	13.6	0.0	13.6	
EMWD Discharge to Temescal Creek	2010	NA	52.5	650	10	Simulation 7a	650	10	NA	NA	27.6	Discharge is to Temescal Creek and occurs at a constant rate from November thru April only (six months per year). Maximum discharge for 2010 (Simulation 7c) is based on the permitted discharge, which is a monthly average of 52.5 mgd. Discharge for Simulation 7b is the average of discharge for 7a and 7c. Maximum discharge for 2020 (Simulation 7f) is based on the pipeline capacity, which is 72 mgd. Discharge for Simulation 7e is the average of discharge for 7d and 7f.
						Simulation 7b	650	10	NA	NA	40.1	
						Simulation 7c	650	10	NA	NA	52.5	
	2020	NA	NA	650	10	Simulation 7d	650	10	NA	NA	43.6	
						Simulation 7e	650	10	NA	NA	57.8	
						Simulation 7f	650	10	NA	NA	72.0	

Notes: For Simuations 7a and 7d, reuse and discharge occur at planned rates.

For Simulations 7b and 7e, reuse is assumed to occur at 50% of planned rates. Discharge is increased accordingly.

For Simulations 7c and 7f, discharge is assumed to occur at design capacity of the POTW facility.

Table 3
Summary of TDS Wasteload Allocation Model Results for Scenario 7

Reach	Underlying Management Zone	TDS Objective (mg/L)	Current ¹ Ambient TDS (mg/L)	Assimilative Capacity (mg/L)	Compliance Metric	Model Results for TDS (mg/L)					
						Scenario 7a Planned Reuse in 2010	Scenario 7b Partial Reuse in 2010	Scenario 7c Maximum Discharge in 2010	Scenario 7d Planned Reuse in 2020	Scenario 7e Partial Reuse in 2020	Scenario 7f Maximum Discharge in 2020
Surface Water											
Santa Ana River Reach 3 at Below Prado Dam	na	700*	620	na***	Maximum of flow-weighted average TDS in August	664	641	611	653	629	612
Santa Ana River Reach 2 at Below Prado Dam	na	650**	494	na***	Maximum of 5-year moving average of annual flow-weighted average TDS	547	555	562	555	562	569
Groundwater											
Santa Ana River overlying the Chino-South MZ	Chino South	680	940	none	Maximum of 10-year volume-weighted running average of TDS in recharge	627	616	592	595	596	592
Santa Ana River overlying the Riverside-A MZ	Riverside A	560	440	120	Maximum of 10-year volume-weighted running average of TDS in recharge	453	458	465	462	464	465
Santa Ana River overlying the Colton MZ	Colton	410	450	none	Maximum of 10-year volume-weighted running average of TDS in recharge	155	155	161	154	154	169
Santa Ana River from the San Jacinto Fault to confluence with San Timoteo Creek; San Timoteo Creek overlying the Bunker Hill-B MZ	Bunker Hill B	330	280	50	Maximum of 10-year volume-weighted running average of TDS in recharge	214	222	323	190	197	359
San Timoteo Creek in the San Timoteo MZ; Cooper's Creek in the San Timoteo MZ	San Timoteo	400	--****	--****	Maximum of 10-year volume-weighted running average of TDS in recharge	422	426	460	406	412	467
San Timoteo Creek in the Beaumont MZ; Noble Creek below Beaumont DP 008; Unnamed tributary to Marshall Creek below Beaumont DP 007	Beaumont	330	260	70	Maximum of 10-year volume-weighted running average of TDS in recharge	114	205	434	114	392	434

Notes

* August Only

** 5-year moving average of annual flow-weighted average TDS

*** Currently, the Regional Board does not recognize the existence of assimilative capacity for TDS in the Santa Ana River.

**** Insufficient data to determine current ambient TDS and, therefore, assimilative capacity (Wildermuth, 2008).

¹ Current ambient represents 2008 conditions for surface water and 1985-2006 conditions for groundwater.

Table 4
Summary of TIN Wasteload Allocation Model Results for Scenario 7

Reach	Underlying Management Zone	Nitrate-Nitrogen Objective (mg/L)	Current ¹ Ambient NO ₃ -N (mg/L)	Assimilative Capacity (mg/L)	Compliance Metric	Model Results for TIN (mg/L-N)					
						Scenario 7a Planned Reuse in 2010	Scenario 7b Partial Reuse in 2010	Scenario 7c Maximum Discharge in 2010	Scenario 7d Planned Reuse in 2020	Scenario 7e Partial Reuse in 2020	Scenario 7f Maximum Discharge in 2020
Surface Water											
Santa Ana River Reach 3 at Below Prado Dam	na	10*	4.3*	na**	Maximum of flow-weighted average TIN in August	7.5	7.7	7.8	7.5	7.7	7.9
Santa Ana River Reach 2 at Below Prado Dam	na	na	na	na**	Maximum of 5-year moving average of annual flow-weighted average TIN	6.3	6.6	7.1	6.5	6.8	7.2
Groundwater											
Santa Ana River overlying the Chino-South MZ	Chino-South	4.2	25.7	none	Maximum of 10-year volume-weighted running average of TIN in recharge	4.2	4.2	4.2	4.1	4.2	4.2
Santa Ana River overlying the Riverside-A MZ	Riverside-A	6.2	4.9	1.3	Maximum of 10-year volume-weighted running average of TIN in recharge	6.2	6.2	6.3	6.2	6.3	6.3
Santa Ana River overlying the Colton MZ	Colton	2.7	2.9	none	Maximum of 10-year volume-weighted running average of TIN in recharge	1.2	1.2	1.3	1.2	1.2	1.3
Santa Ana River from the San Jacinto Fault to confluence with San Timoteo Creek; San Timoteo Creek overlying the Bunker Hill-B MZ	Bunker Hill-B	7.3	5.4	1.9	Maximum of 10-year volume-weighted running average of TIN in recharge	1.6	1.7	2.5	1.4	1.5	2.7
San Timoteo Creek in the San Timoteo MZ; Cooper's Creek in the San Timoteo MZ	San Timoteo	5	--***	--***	Maximum of 10-year volume-weighted running average of TIN in recharge	3.4	3.5	3.7	3.5	3.4	3.8
San Timoteo Creek in the Beaumont MZ; Noble Creek below Beaumont DP 008; Unnamed tributary to Marshall Creek below Beaumont DP 007	Beaumont	5	1.6	3.4	Maximum of 10-year volume-weighted running average of TIN in recharge	0.9	1.8	3.9	0.9	3.5	3.9

Notes

* August only; Total nitrogen (filtered samples)

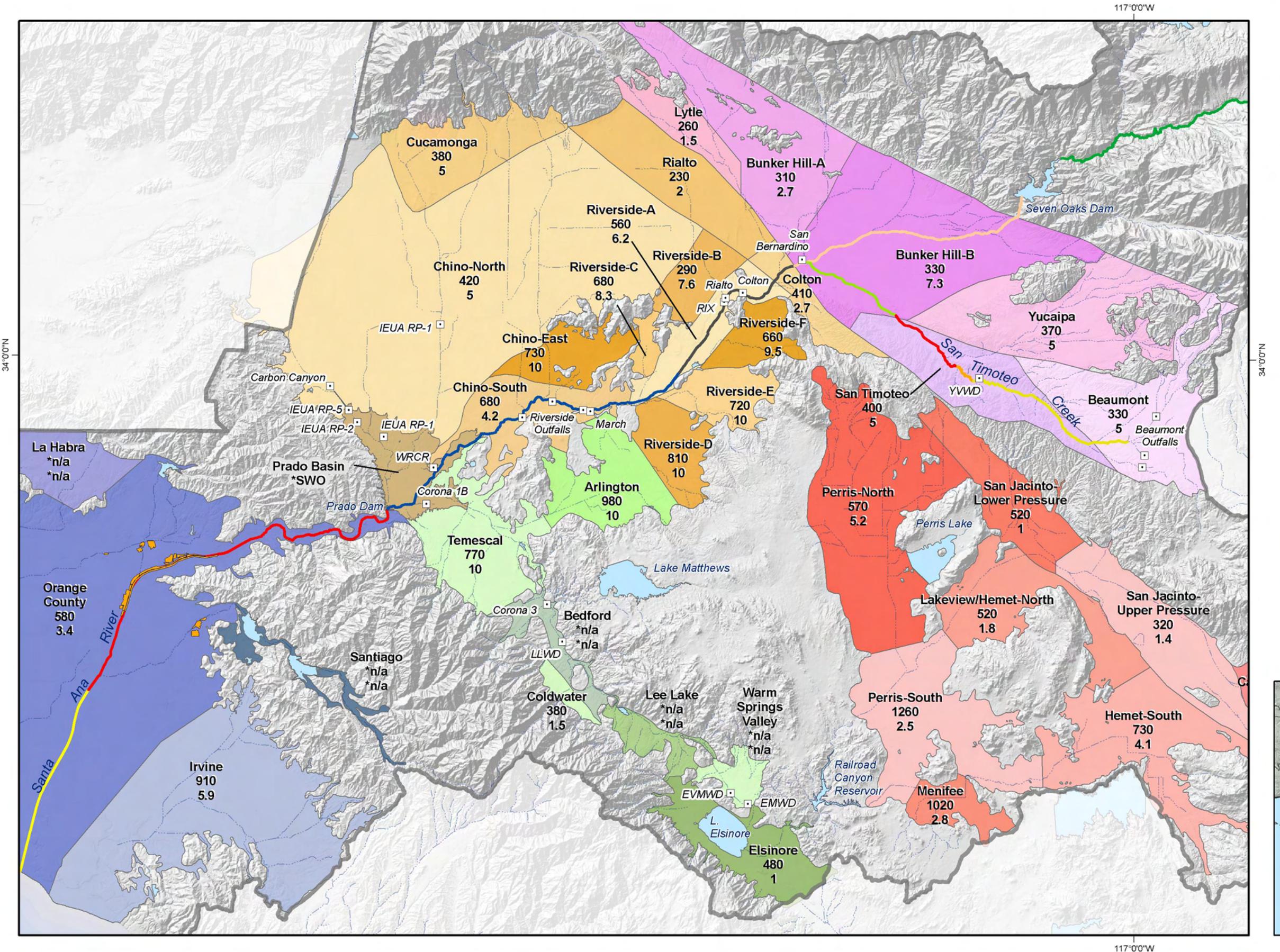
** Currently, the Regional Board does not recognize the existence of assimilative capacity for nitrogen in the Santa Ana River

*** Insufficient data to determine current ambient TIN and, therefore, assimilative capacity (Wilderlumth, 2008).

¹ Current ambient represents 2008 conditions for surface water and 1985-2006 conditions for groundwater

Table 5
Wasteload Allocation for POTWs in the Upper Santa Ana River Watershed and Regulatory Implications

POTW	Wasteload Allocation			Receiving Waters	For Receiving Waters with No Assimilative Capacity 1. Does Discharge Contribute to an Exceedance of a Surface Water Quality Objective? or 2. Does Discharge Contribute to Streambed Recharge that Exceeds a Groundwater Quality Objective?	For Receiving Groundwaters with Assimilative Capacity Is an Antidegradation Analysis Required?
	TDS mg/L	TIN mg/L	Range of Discharge Simulated in Scenario 7 mgd			
City of Beaumont WWTP #1	490	6	1.8 - 8.0	DP-001: Cooper's Creek, San Timoteo Creek, San Timoteo MZ DP-007: Marshall Creek, San Timoteo Creek, Beaumont MZ DP-008: Noble Creek, San Timoteo Creek, Beaumont MZ	Maybe. There is not yet an assimilative capacity finding for the San Timoteo management zone. If no assimilative capacity exists in San Timoteo, then the TDS of streambed recharge to San Timoteo must be less than the TDS objective of 400 mg/L.	If there is assimilative capacity in the San Timoteo management zone, then for the 1.8 mgd of discharge at DP-001 to Cooper's Creek, the Regional Board may require an antidegradation analysis for San Timoteo for TDS and possibly TIN. For discharge at DP-007 and DP-008, the Regional Board must evaluate the antidegradation analysis that was conducted for the Beaumont management zone as part of the stakeholders' "maximum benefit" demonstration. If the Regional Board finds that the salt loading from recycled water reuse/recharge that was assumed in the antidegradation analysis is greater than or equal to the salt loading assumed in Scenarios 7b, 7c, 7e, and 7f, then the Regional Board can approve the wasteload allocation that includes up to 6.2 mgd of discharge at DP-007 and/or DP-008 without further analysis.
Yucaipa Valley Water District Wochholz WTP	540	6	1.6 - 11.0	San Timoteo Creek San Timoteo MZ Bunker Hill-B MZ	Maybe. There is not yet an assimilative capacity finding for the San Timoteo management zone. If no assimilative capacity exists in San Timoteo, then the TDS of streambed recharge to San Timoteo must be less than the TDS objective of 400 mg/L.	If there is assimilative capacity in the San Timoteo management zone, then under all discharge conditions simulated in Scenario 7 the Regional Board may require an antidegradation analysis in San Timoteo for TDS and possibly TIN. For discharges above 3.3 mgd, the Regional Board may require an antidegradation analysis for the Bunker Hill-B management zone for TDS.
City of Rialto WWTP	490	10	8.6 - 12.0	Santa Ana River Riverside-A MZ Chino-South MZ	No.	For all discharge conditions simulated in Scenario 7, the Regional Board may require an antidegradation analysis for the Riverside-A management zone for TDS and TIN.
City of San Bernardino City of Colton RIX Facility	550	10	20.8 - 64.0	Santa Ana River Riverside-A MZ Chino-South MZ	No.	For all discharge conditions simulated in Scenario 7, the Regional Board may require an antidegradation analysis for the Riverside-A management zone for TDS and TIN.
City of Riverside RWQCP	650	10	33 - 46.0	Santa Ana River Chino-South MZ	No.	N/A
Western Municipal Water District March WWRF	550	6	2.3 -5.0	Santa Ana River Chino-South MZ	No.	N/A
Inland Empire Utilities Agency RP1 DP-001 RP1/RP4 DP-002 RP5 Carbon Canyon WRP	550	8	18.0 - 86.0	Chino Creek Cucamonga Creek PBMZ Santa Ana River	No.	N/A
Western Riverside County Regional Wastewater Authority WTP	625	10	6.2 - 14.0	Prado Basin MZ Santa Ana River	No.	N/A
City of Corona WWTP #1	700	10	3.6 - 14.5	Prado Basin MZ Santa Ana River	No.	N/A
City of Corona WWTP #3	700	10	0.2 - 1.0	Temescal Creek Prado Basin MZ Santa Ana River	No.	N/A
Lee Lake Water District WWTP	650	13	0.45 - 2.3	Temescal Creek Prado Basin MZ Santa Ana River	No.	N/A
Elsinore Valley Municipal Water District RWWRP	700	13	0.5 - 13.6	Temescal Creek Prado Basin MZ Santa Ana River	No.	N/A
Eastern Municipal Water District Discharge at Nichols Road	650	10	27.6 - 72.0	Temescal Creek Prado Basin MZ Santa Ana River	No.	N/A

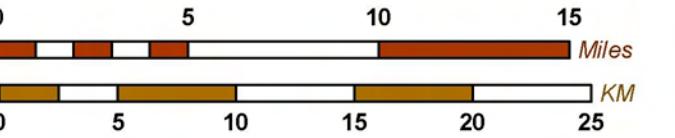


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Basin Monitoring Program Task Force

ddendum to 2008 Wasteload Allocation Model Report



Groundwater Management Zones

Management Zone Chino North
 TDS Objective 420
 (mg/L) 5.0
 NO₃-N Objective
 (mg/L)

San Timoteo Creek

A horizontal legend bar consisting of four colored segments: green, red, orange, and yellow. Each segment is followed by a label: 'Reach 1' (green), 'Reach 2' (red), 'Reach 3' (orange), and 'Reach 4' (yellow).

Santa Ana River

- Reach 1
- Reach 2
- Reach 3
- Reach 4
- Reach 5
- Reach 6

Other Features

Recycled Water Discharge Location
Santa Ana Regional Water Quality
Control Board Boundary
Rivers, Creeks, and Flood Control Channels
OCWD Recharge Facilities
Lakes & Reservoirs

*SWO: Surface water objectives apply

*n/a: Not enough data were available to calculate water quality objectives



POTW Discharge Locations

Santa Ana River Watershed

Figure 1

Appendix A

Time series charts and tables of the WLAM results for Scenario 7 are included as a PDF file on attached CD.

Appendix B

Responses to comments by members of the Basin Monitoring Program Task Force on the draft technical memorandum.



Table 7a-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 7a - Planned Reuse in 2010

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only
1950	516	481	446	382	414	664	6.04	5.61	5.20	4.32	4.75	7.52
1951	609	506	463	393	414	664	7.13	5.91	5.39	4.44	4.75	7.52
1952	319	477	420	382	414	664	3.73	5.58	4.90	4.32	4.75	7.52
1953	565	527	484	429	414	663	6.60	6.17	5.66	4.96	4.75	7.52
1954	430	488	453	420	414	663	5.01	5.70	5.30	4.86	4.75	7.51
1955	530	490	455	451	414	662	6.19	5.73	5.32	5.26	4.75	7.50
1956	399	448	424	442	414	663	4.73	5.25	4.97	5.17	4.75	7.52
1957	542	493	482	448	414	663	6.33	5.77	5.65	5.24	4.75	7.52
1958	350	450	433	457	414	637	4.04	5.26	5.06	5.34	4.75	7.21
1959	601	484	457	455	414	663	7.05	5.67	5.35	5.32	4.75	7.52
1960	561	491	462	458	414	663	6.55	5.74	5.39	5.36	4.75	7.52
1961	638	538	503	459	414	647	7.49	6.29	5.87	5.37	4.75	7.33
1962	439	518	482	482	414	664	5.13	6.05	5.63	5.64	4.75	7.52
1963	497	547	534	477	414	663	5.82	6.41	6.26	5.57	4.75	7.52
1964	560	539	528	489	414	664	6.55	6.31	6.18	5.72	4.75	7.52
1965	504	527	517	487	414	653	5.87	6.17	6.04	5.69	4.75	7.40
1966	359	471	457	479	414	664	4.16	5.50	5.33	5.59	4.75	7.52
1967	318	447	420	448	414	651	3.67	5.21	4.88	5.22	4.75	7.37
1968	476	443	417	466	414	663	5.60	5.17	4.85	5.44	4.75	7.52
1969	222	376	326	394	414	644	2.48	4.35	3.75	4.57	4.75	7.26
1970	515	378	326	392	414	663	6.02	4.38	3.75	4.55	4.75	7.51
1971	531	412	343	389	414	662	6.20	4.79	3.95	4.50	4.75	7.50
1972	519	452	371	393	414	640	6.09	5.28	4.29	4.56	4.75	7.24
1973	426	442	366	389	414	664	4.93	5.14	4.22	4.50	4.75	7.52
1974	460	490	485	384	414	664	5.39	5.72	5.66	4.45	4.75	7.52
1975	527	493	487	385	414	664	6.16	5.75	5.69	4.46	4.75	7.52
1976	527	492	487	398	414	664	6.14	5.74	5.68	4.61	4.75	7.52
1977	522	492	487	419	414	344	6.11	5.74	5.68	4.86	4.75	3.84
1978	261	459	406	384	414	664	2.96	5.35	4.71	4.44	4.75	7.52
1979	401	448	396	434	414	664	4.59	5.19	4.58	5.04	4.75	7.52
1980	281	398	343	395	414	661	2.66	4.49	3.75	4.44	4.75	7.48
1981	566	406	345	396	414	664	6.61	4.59	3.77	4.46	4.75	7.52
1982	386	379	333	387	414	662	4.49	4.26	3.65	4.36	4.75	7.51
1983	313	389	350	373	414	436	3.31	4.33	3.77	4.16	4.75	4.87
1984	518	413	360	376	414	661	6.06	4.63	3.89	4.19	4.75	7.49
1985	504	457	421	375	414	664	5.89	5.27	4.80	4.18	4.75	7.52
1986	451	434	408	372	414	663	5.25	5.00	4.65	4.14	4.75	7.51
1987	588	475	436	374	414	664	6.90	5.48	4.97	4.17	4.75	7.52
1988	499	512	507	405	414	663	5.83	5.99	5.93	4.52	4.75	7.51
1989	562	521	515	415	414	664	6.57	6.09	6.01	4.64	4.75	7.52
1990	571	534	527	465	414	664	6.69	6.25	6.16	5.37	4.75	7.52
1991	393	523	508	450	414	663	4.58	6.12	5.94	5.19	4.75	7.52
1992	414	488	473	453	414	664	4.82	5.70	5.52	5.23	4.75	7.52
1993	257	439	374	426	414	663	2.58	5.05	4.19	4.86	4.75	7.52
1994	560	439	374	428	414	664	6.54	5.04	4.18	4.88	4.75	7.52
1995	311	387	341	404	414	664	3.36	4.38	3.76	4.57	4.75	7.52
1996	480	405	349	406	414	664	5.64	4.59	3.85	4.59	4.75	7.52
1997	464	414	354	400	414	664	5.39	4.70	3.90	4.52	4.75	7.52
1998	315	426	390	382	414	647	3.65	4.91	4.46	4.32	4.75	7.33
1999	628	439	394	384	414	664	7.36	5.08	4.51	4.34	4.75	7.52
Maximum	638	547	534	489	414	664	7.49	6.41	6.26	5.72	4.75	7.52

Figure 7a-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7a - Planned Reuse in 2010

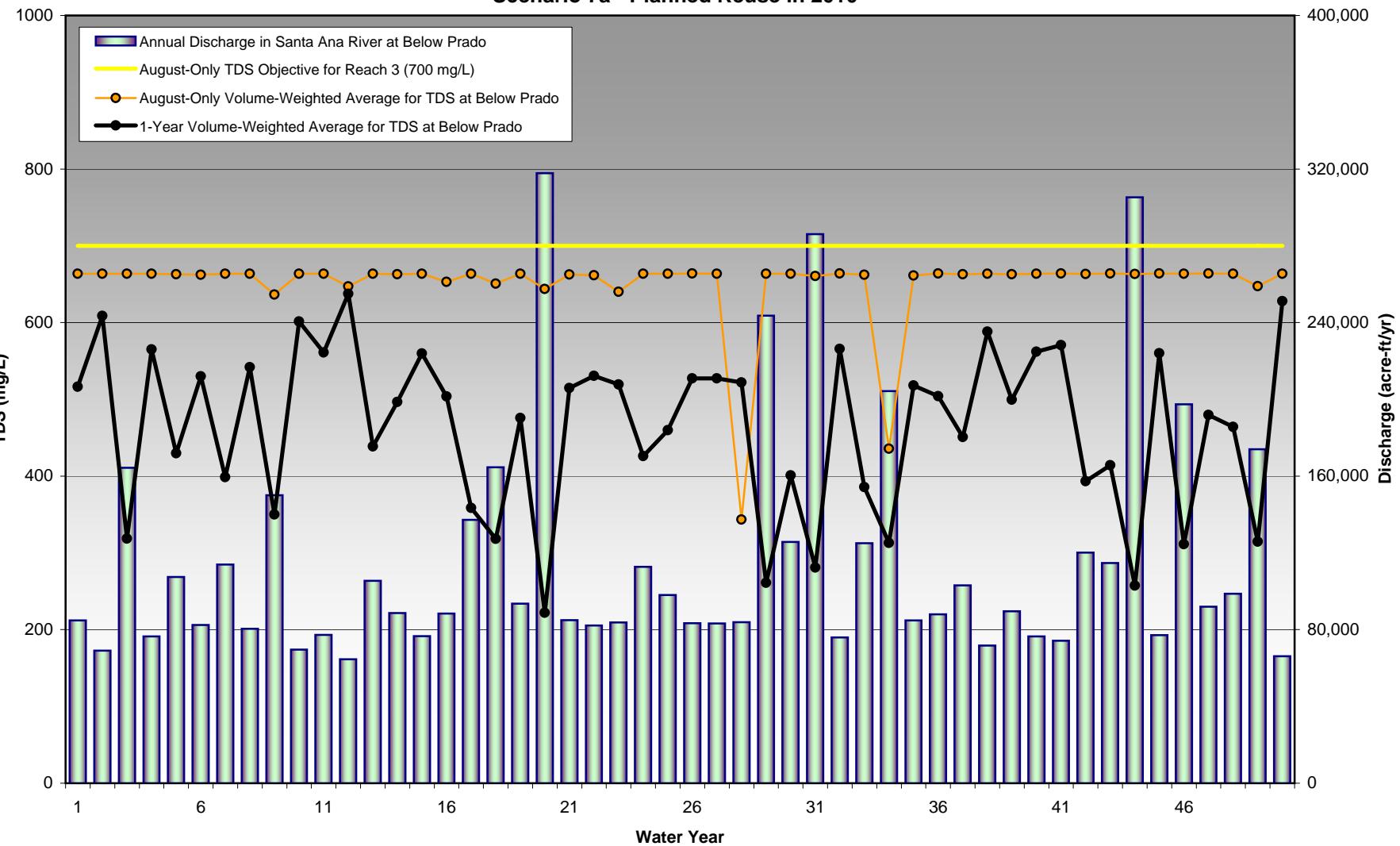


Figure 7a-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7a - Planned Reuse in 2010

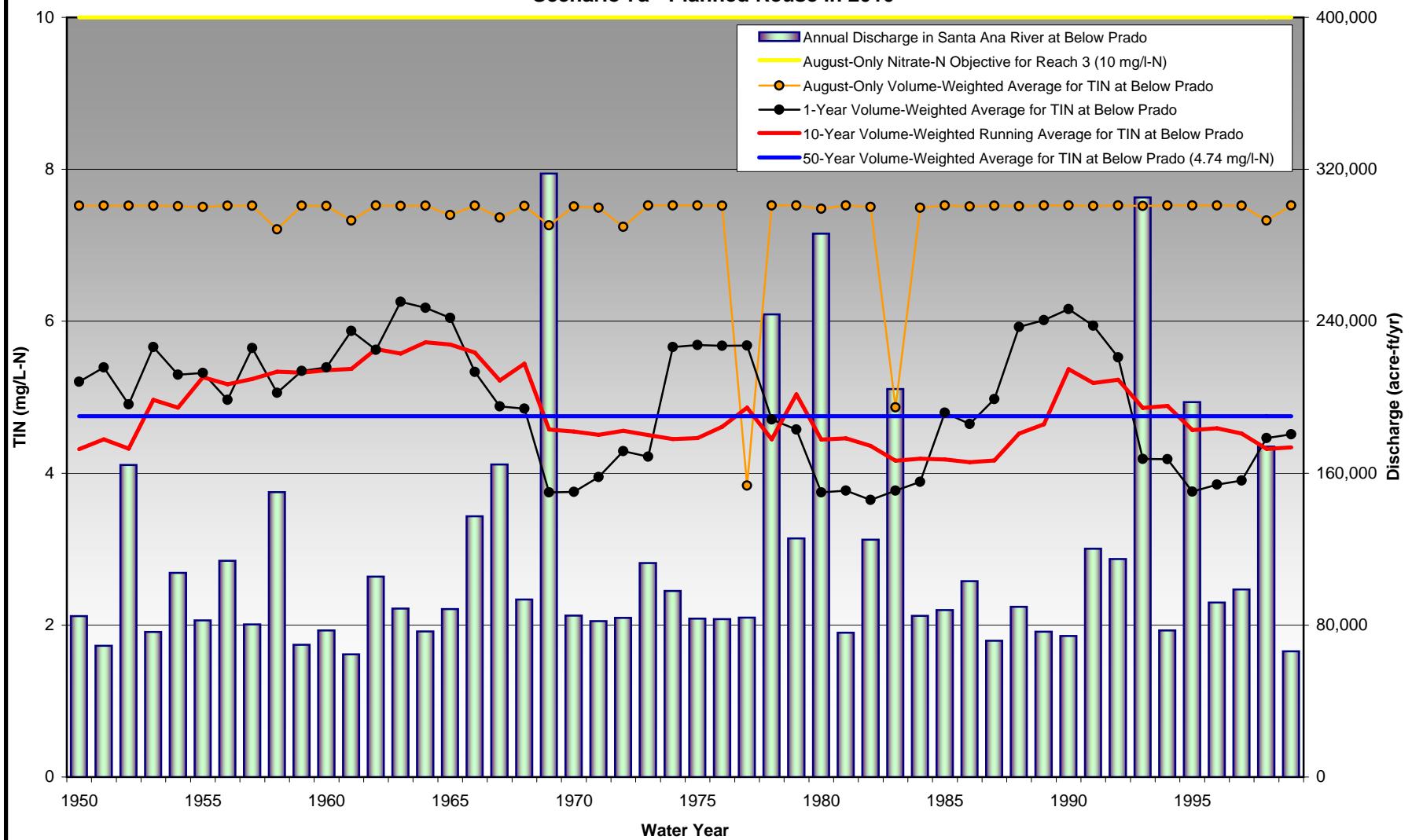


Figure 7a-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 7a - Planned Reuse in 2010

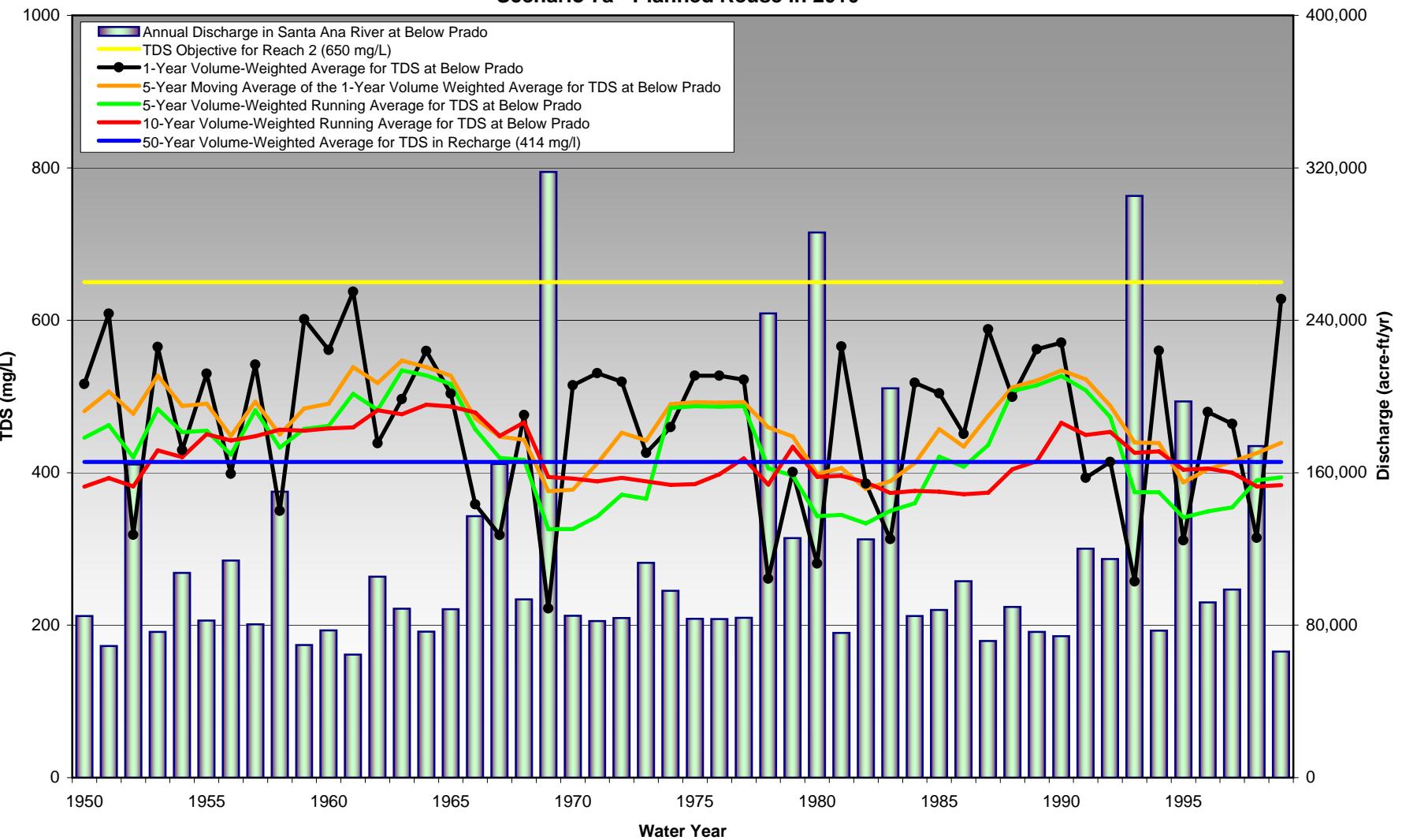


Table 7a-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 7a - Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	632	580	600	4.18	3.80	3.95
1951	651	585	600	4.31	3.83	3.95
1952	548	580	600	3.62	3.80	3.95
1953	640	602	600	4.24	3.97	3.95
1954	602	599	600	3.98	3.94	3.95
1955	630	611	600	4.17	4.04	3.95
1956	619	609	600	4.10	4.03	3.95
1957	637	612	600	4.22	4.04	3.95
1958	553	615	600	3.63	4.07	3.95
1959	658	615	600	4.36	4.07	3.95
1960	647	616	600	4.28	4.08	3.95
1961	663	617	600	4.39	4.08	3.95
1962	607	624	600	4.01	4.13	3.95
1963	627	623	600	4.15	4.12	3.95
1964	646	627	600	4.28	4.15	3.95
1965	627	627	600	4.15	4.15	3.95
1966	578	623	600	3.81	4.12	3.95
1967	554	614	600	3.65	4.06	3.95
1968	627	622	600	4.15	4.11	3.95
1969	462	598	600	2.97	3.94	3.95
1970	636	597	600	4.21	3.94	3.95
1971	635	595	600	4.21	3.92	3.95
1972	640	598	600	4.24	3.94	3.95
1973	602	595	600	3.97	3.93	3.95
1974	618	593	600	4.08	3.91	3.95
1975	638	594	600	4.22	3.91	3.95
1976	628	599	600	4.15	3.95	3.95
1977	642	608	600	4.25	4.01	3.95
1978	483	591	600	3.13	3.89	3.95
1979	582	607	600	3.79	4.00	3.95
1980	487	589	600	3.04	3.86	3.95
1981	649	590	600	4.30	3.87	3.95
1982	580	585	600	3.83	3.83	3.95
1983	515	575	600	3.26	3.76	3.95
1984	631	576	600	4.17	3.76	3.95
1985	628	576	600	4.16	3.76	3.95
1986	616	575	600	4.07	3.75	3.95
1987	654	576	600	4.33	3.76	3.95
1988	633	592	600	4.19	3.87	3.95
1989	646	598	600	4.28	3.92	3.95
1990	643	617	600	4.26	4.07	3.95
1991	598	612	600	3.95	4.03	3.95
1992	596	614	600	3.93	4.04	3.95
1993	455	604	600	2.85	3.97	3.95
1994	639	605	600	4.23	3.98	3.95
1995	524	593	600	3.35	3.89	3.95
1996	635	595	600	4.20	3.90	3.95
1997	609	591	600	4.02	3.87	3.95
1998	528	580	600	3.46	3.80	3.95
1999	657	581	600	4.36	3.81	3.95
Maximum	663	627		4.39	4.15	

Figure 7a-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7a - Planned Reuse in 2010

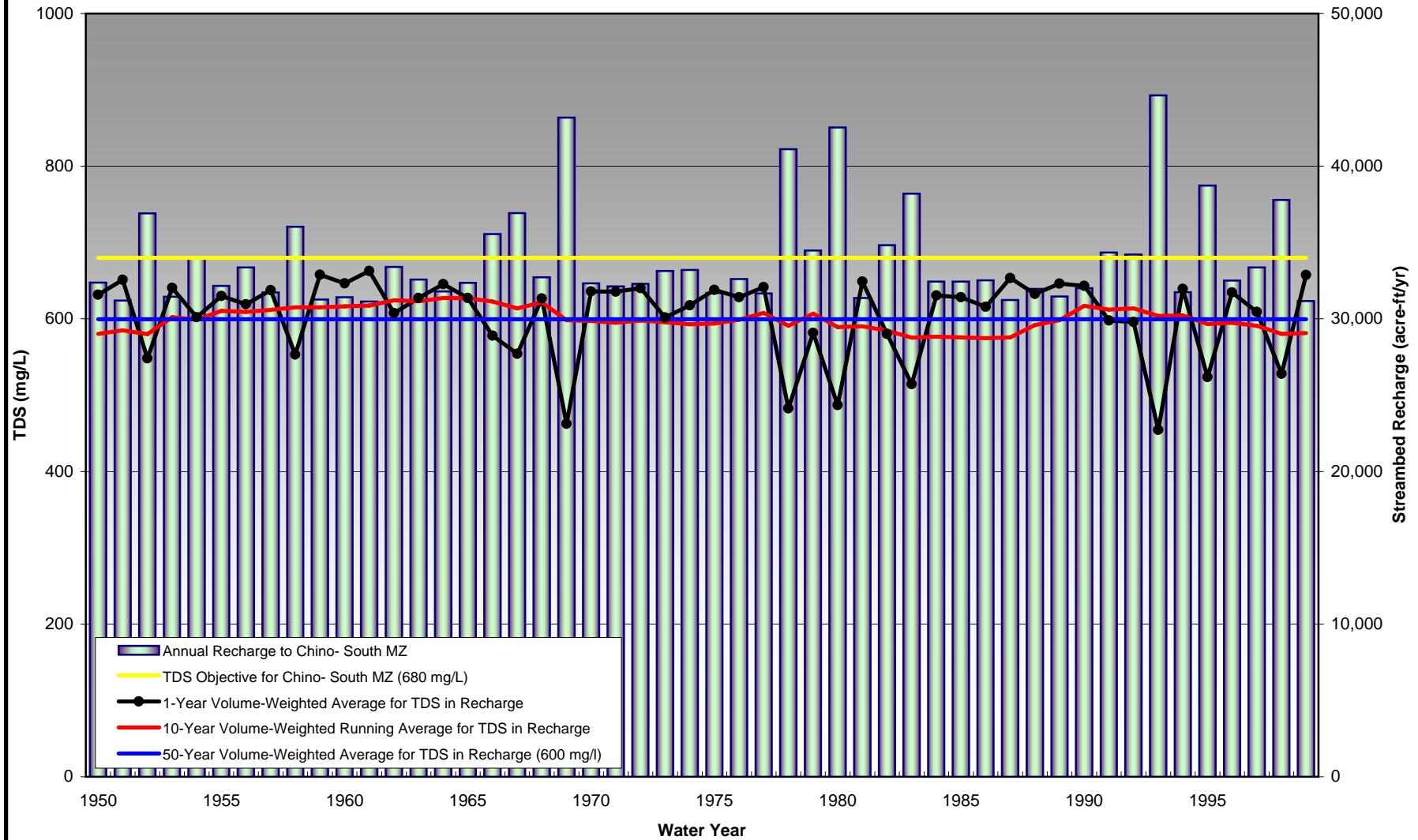


Figure 7a-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7a - Planned Reuse in 2010

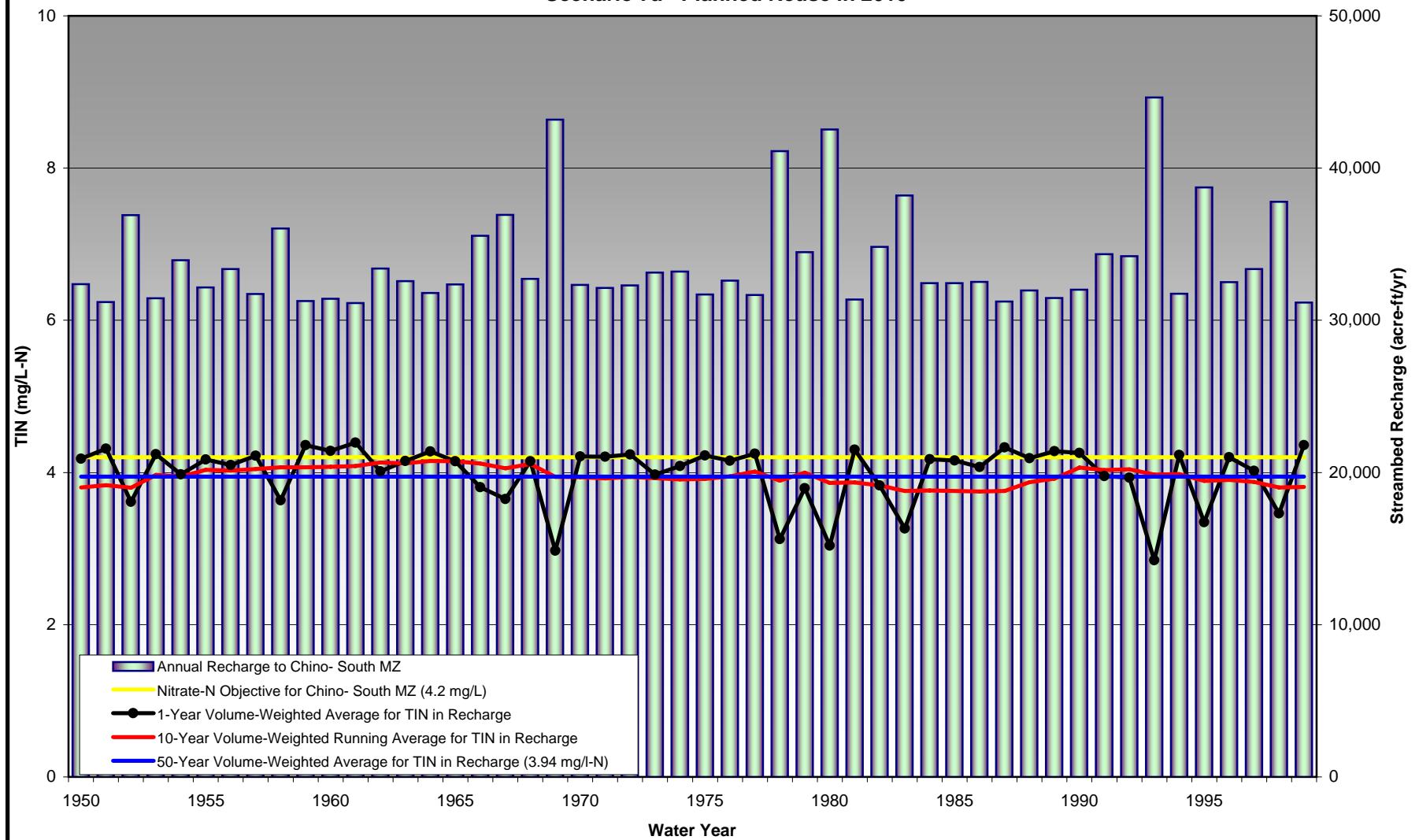


Table 7a-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 7a - Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	446	380	408	6.08	4.99	5.44
1951	505	387	408	6.99	5.09	5.44
1952	351	383	408	4.63	5.04	5.44
1953	482	414	408	6.61	5.55	5.44
1954	407	409	408	5.47	5.47	5.44
1955	457	424	408	6.25	5.72	5.44
1956	455	424	408	6.25	5.73	5.44
1957	478	431	408	6.54	5.83	5.44
1958	345	434	408	4.45	5.88	5.44
1959	499	433	408	6.89	5.86	5.44
1960	496	437	408	6.84	5.92	5.44
1961	516	438	408	7.17	5.94	5.44
1962	413	447	408	5.57	6.08	5.44
1963	463	445	408	6.35	6.05	5.44
1964	477	453	408	6.56	6.17	5.44
1965	442	451	408	5.99	6.14	5.44
1966	379	442	408	5.01	5.99	5.44
1967	357	428	408	4.69	5.78	5.44
1968	447	441	408	6.09	5.99	5.44
1969	271	406	408	3.19	5.42	5.44
1970	451	404	408	6.15	5.38	5.44
1971	449	399	408	6.10	5.31	5.44
1972	475	404	408	6.53	5.39	5.44
1973	412	400	408	5.50	5.32	5.44
1974	434	397	408	5.89	5.27	5.44
1975	475	399	408	6.50	5.31	5.44
1976	440	405	408	5.98	5.40	5.44
1977	476	417	408	6.54	5.58	5.44
1978	288	394	408	3.47	5.22	5.44
1979	395	417	408	5.25	5.60	5.44
1980	288	393	408	3.46	5.19	5.44
1981	494	396	408	6.81	5.24	5.44
1982	380	388	408	5.06	5.12	5.44
1983	307	375	408	3.85	4.92	5.44
1984	453	377	408	6.18	4.94	5.44
1985	461	376	408	6.30	4.93	5.44
1986	443	376	408	6.00	4.93	5.44
1987	504	377	408	6.96	4.95	5.44
1988	464	399	408	6.34	5.29	5.44
1989	475	405	408	6.51	5.40	5.44
1990	476	434	408	6.55	5.87	5.44
1991	403	426	408	5.42	5.74	5.44
1992	388	427	408	5.16	5.76	5.44
1993	264	412	408	3.08	5.51	5.44
1994	470	413	408	6.43	5.53	5.44
1995	330	399	408	4.20	5.29	5.44
1996	452	400	408	6.15	5.31	5.44
1997	407	393	408	5.43	5.20	5.44
1998	330	380	408	4.19	4.99	5.44
1999	513	382	408	7.10	5.02	5.44
Maximum	516	453		7.17	6.17	

Figure 7a-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7a - Planned Reuse in 2010

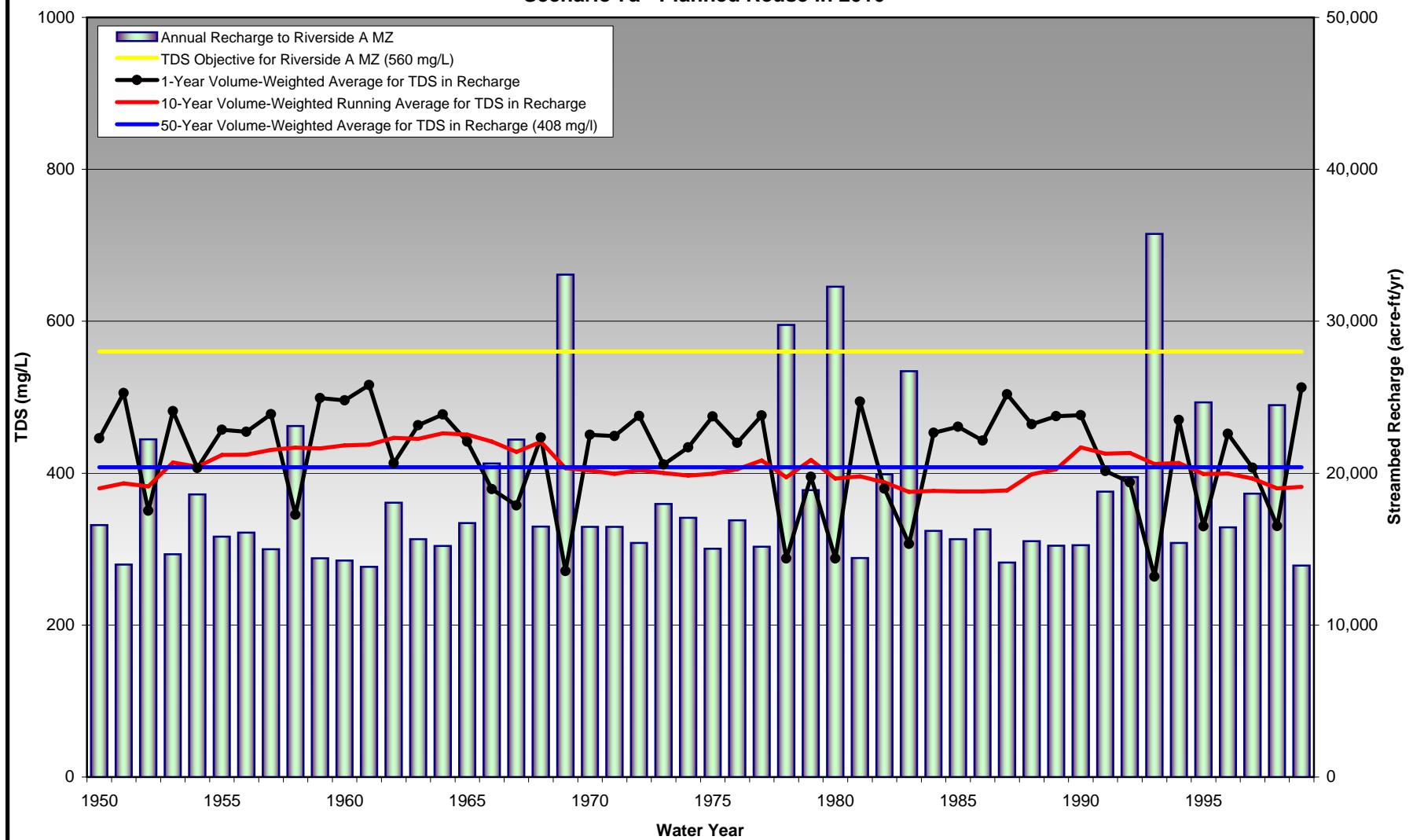


Figure 7a-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7a - Planned Reuse in 2010

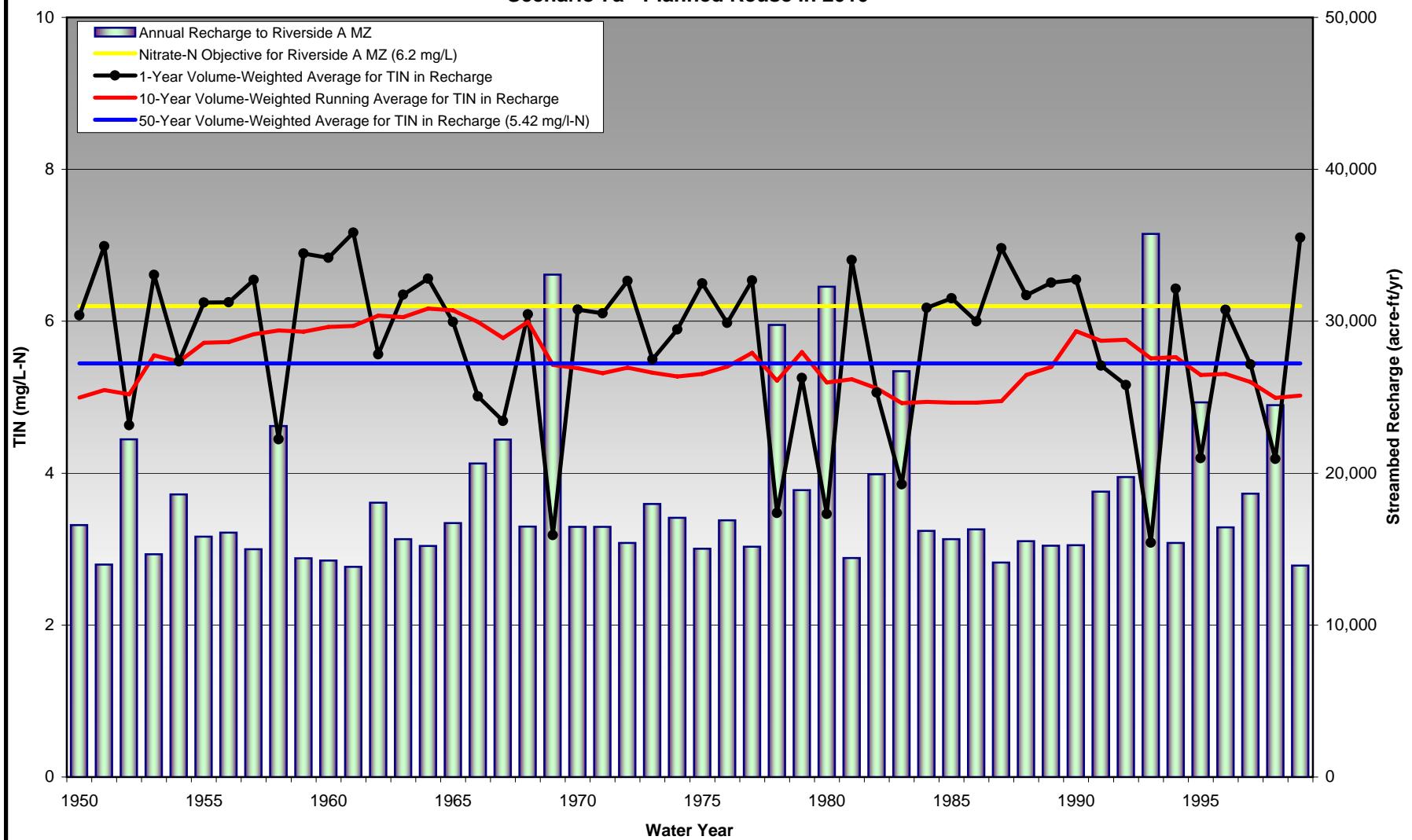


Table 7a-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 7a - Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	141	153	152	1.13	1.17	1.17
1951	165	155	152	1.24	1.18	1.17
1952	139	154	152	1.12	1.18	1.17
1953	159	153	152	1.21	1.18	1.17
1954	142	152	152	1.14	1.18	1.17
1955	147	152	152	1.17	1.18	1.17
1956	126	150	152	1.05	1.17	1.17
1957	159	150	152	1.22	1.17	1.17
1958	152	147	152	1.18	1.16	1.17
1959	166	147	152	1.25	1.15	1.17
1960	156	148	152	1.20	1.16	1.17
1961	161	147	152	1.21	1.16	1.17
1962	146	149	152	1.15	1.17	1.17
1963	136	148	152	1.09	1.16	1.17
1964	153	149	152	1.18	1.16	1.17
1965	148	149	152	1.15	1.16	1.17
1966	139	149	152	1.11	1.16	1.17
1967	145	147	152	1.14	1.15	1.17
1968	141	146	152	1.12	1.14	1.17
1969	160	151	152	1.20	1.16	1.17
1970	139	150	152	1.13	1.16	1.17
1971	147	150	152	1.17	1.16	1.17
1972	150	150	152	1.17	1.16	1.17
1973	155	151	152	1.20	1.17	1.17
1974	139	150	152	1.11	1.16	1.17
1975	161	151	152	1.22	1.17	1.17
1976	137	151	152	1.08	1.17	1.17
1977	148	152	152	1.15	1.17	1.17
1978	156	154	152	1.18	1.18	1.17
1979	153	151	152	1.18	1.17	1.17
1980	156	153	152	1.19	1.18	1.17
1981	168	154	152	1.26	1.18	1.17
1982	131	152	152	1.07	1.17	1.17
1983	155	152	152	1.20	1.17	1.17
1984	160	153	152	1.21	1.18	1.17
1985	148	153	152	1.14	1.18	1.17
1986	157	154	152	1.20	1.18	1.17
1987	166	154	152	1.25	1.18	1.17
1988	152	153	152	1.17	1.18	1.17
1989	159	154	152	1.21	1.18	1.17
1990	153	152	152	1.18	1.18	1.17
1991	138	150	152	1.11	1.17	1.17
1992	136	151	152	1.09	1.17	1.17
1993	156	152	152	1.18	1.17	1.17
1994	162	152	152	1.22	1.17	1.17
1995	153	152	152	1.17	1.17	1.17
1996	157	152	152	1.19	1.17	1.17
1997	152	152	152	1.18	1.16	1.17
1998	159	153	152	1.22	1.17	1.17
1999	181	154	152	1.33	1.18	1.17
Maximum	181	155		1.33	1.18	

Figure 7a-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7a - Planned Reuse in 2010

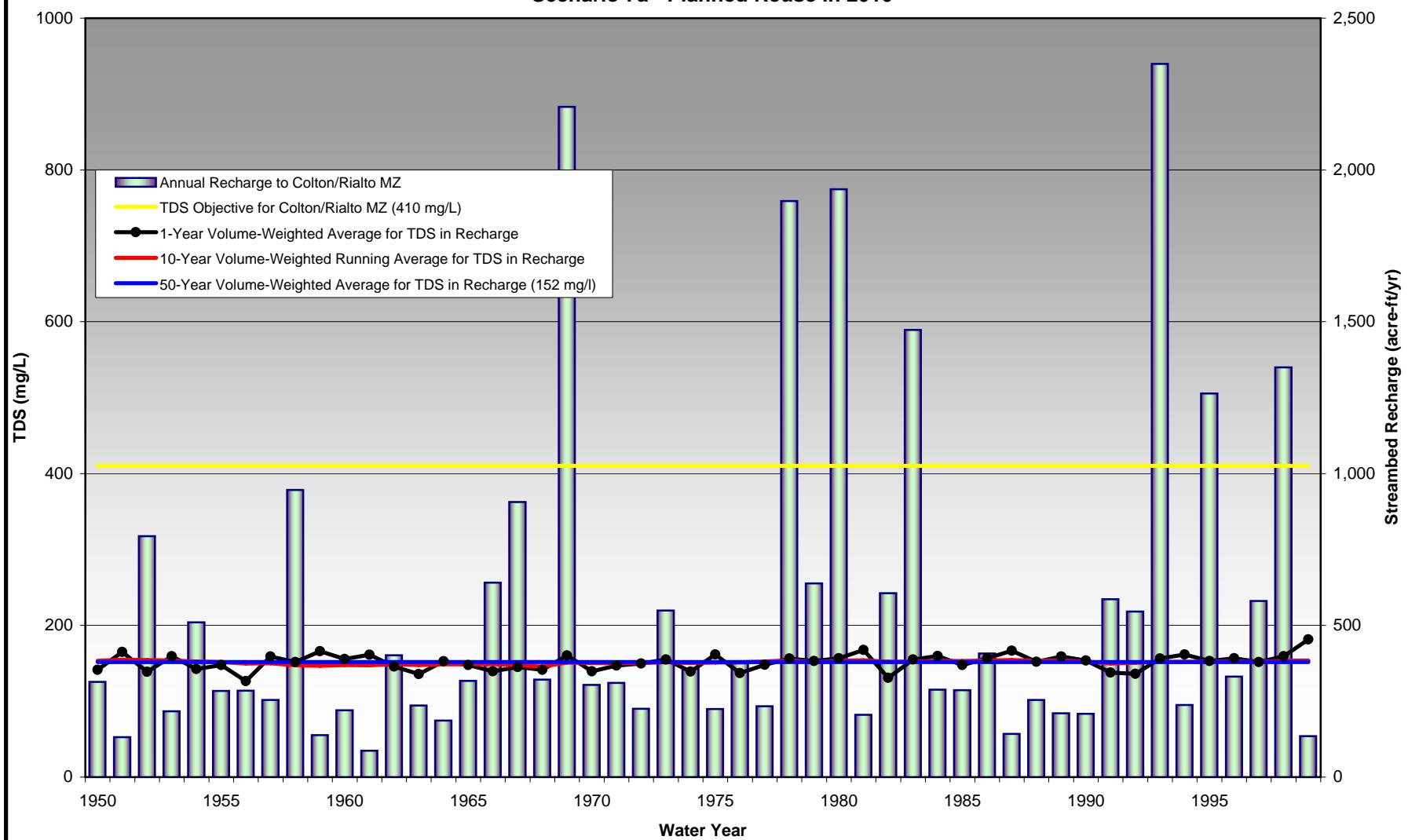


Figure 7a-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7a - Planned Reuse in 2010

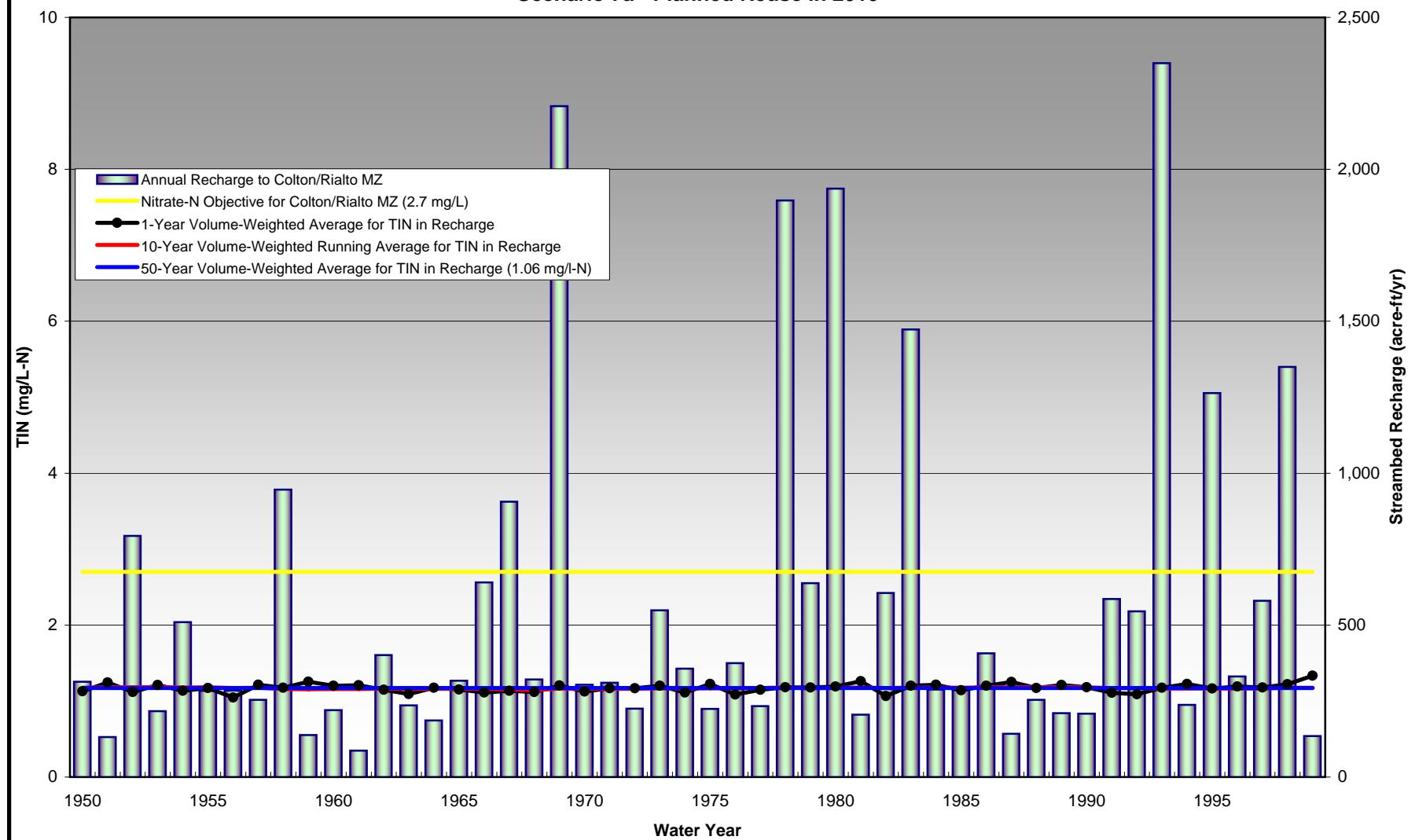


Table 7a-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 7a - Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	214	204	206	1.63	1.53	1.55
1951	240	206	206	1.81	1.54	1.55
1952	193	205	206	1.46	1.53	1.55
1953	219	210	206	1.65	1.57	1.55
1954	199	208	206	1.51	1.56	1.55
1955	213	210	206	1.62	1.58	1.55
1956	230	210	206	1.75	1.58	1.55
1957	216	210	206	1.62	1.59	1.55
1958	189	210	206	1.42	1.58	1.55
1959	231	209	206	1.74	1.58	1.55
1960	212	208	206	1.61	1.58	1.55
1961	256	209	206	1.94	1.58	1.55
1962	204	211	206	1.54	1.59	1.55
1963	225	211	206	1.71	1.60	1.55
1964	226	214	206	1.71	1.62	1.55
1965	211	214	206	1.60	1.62	1.55
1966	201	211	206	1.53	1.60	1.55
1967	202	209	206	1.52	1.58	1.55
1968	213	214	206	1.61	1.62	1.55
1969	193	207	206	1.41	1.55	1.55
1970	216	207	206	1.65	1.56	1.55
1971	219	206	206	1.66	1.55	1.55
1972	236	208	206	1.78	1.56	1.55
1973	198	206	206	1.50	1.55	1.55
1974	214	205	206	1.62	1.54	1.55
1975	217	206	206	1.63	1.54	1.55
1976	210	207	206	1.60	1.55	1.55
1977	217	208	206	1.64	1.56	1.55
1978	186	203	206	1.37	1.52	1.55
1979	195	204	206	1.46	1.54	1.55
1980	194	202	206	1.45	1.51	1.55
1981	222	202	206	1.66	1.51	1.55
1982	196	200	206	1.49	1.50	1.55
1983	188	198	206	1.41	1.49	1.55
1984	223	199	206	1.67	1.49	1.55
1985	216	199	206	1.62	1.49	1.55
1986	207	199	206	1.55	1.49	1.55
1987	234	199	206	1.76	1.49	1.55
1988	212	203	206	1.60	1.52	1.55
1989	220	205	206	1.66	1.54	1.55
1990	234	209	206	1.76	1.57	1.55
1991	205	208	206	1.56	1.57	1.55
1992	197	208	206	1.50	1.57	1.55
1993	188	208	206	1.39	1.56	1.55
1994	221	208	206	1.66	1.56	1.55
1995	199	206	206	1.48	1.54	1.55
1996	227	207	206	1.70	1.55	1.55
1997	207	206	206	1.56	1.54	1.55
1998	198	204	206	1.47	1.53	1.55
1999	247	205	206	1.84	1.53	1.55
Maximum	256	214		1.94	1.62	

Figure 7a-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7a - Planned Reuse in 2010

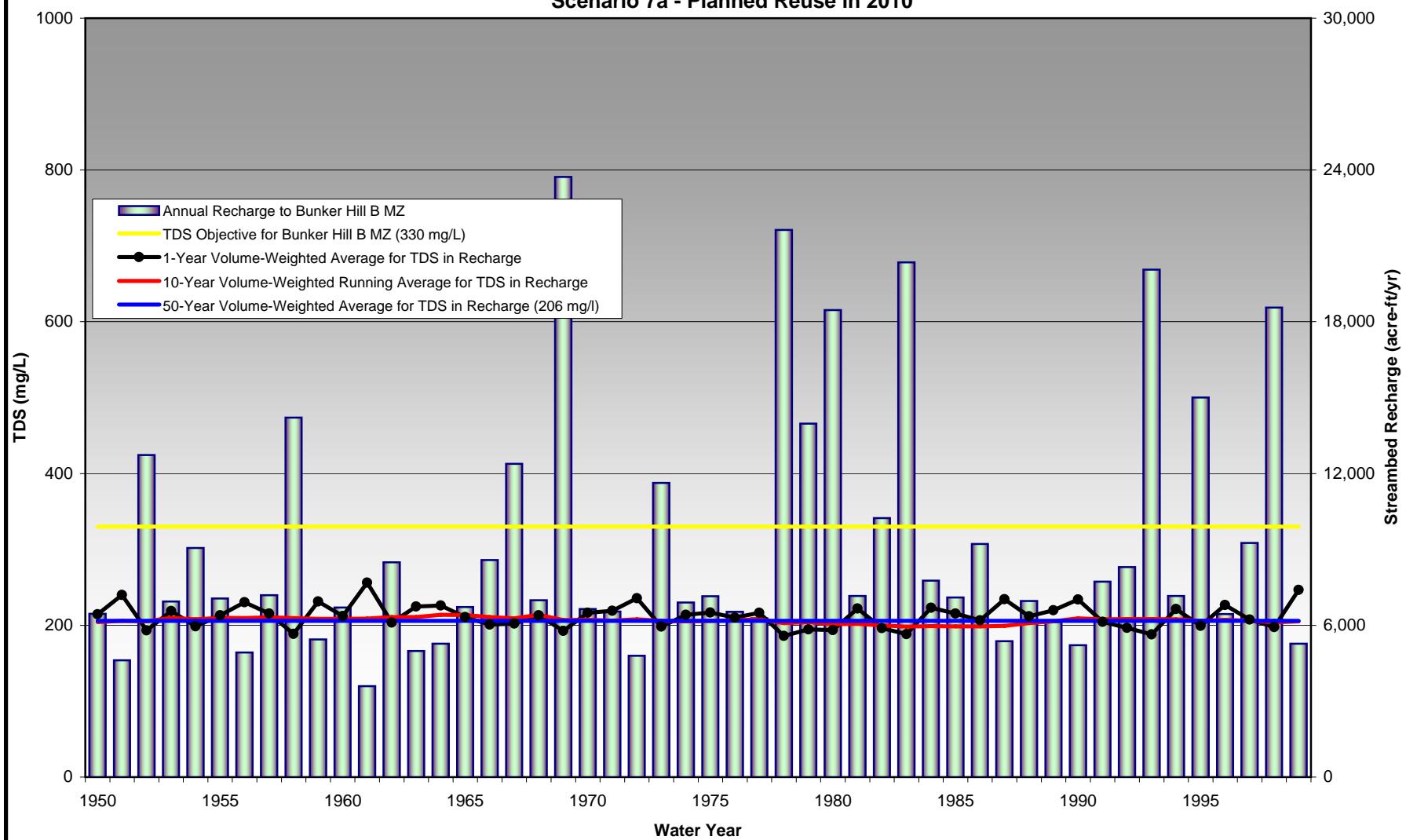


Figure 7a-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7a - Planned Reuse in 2010

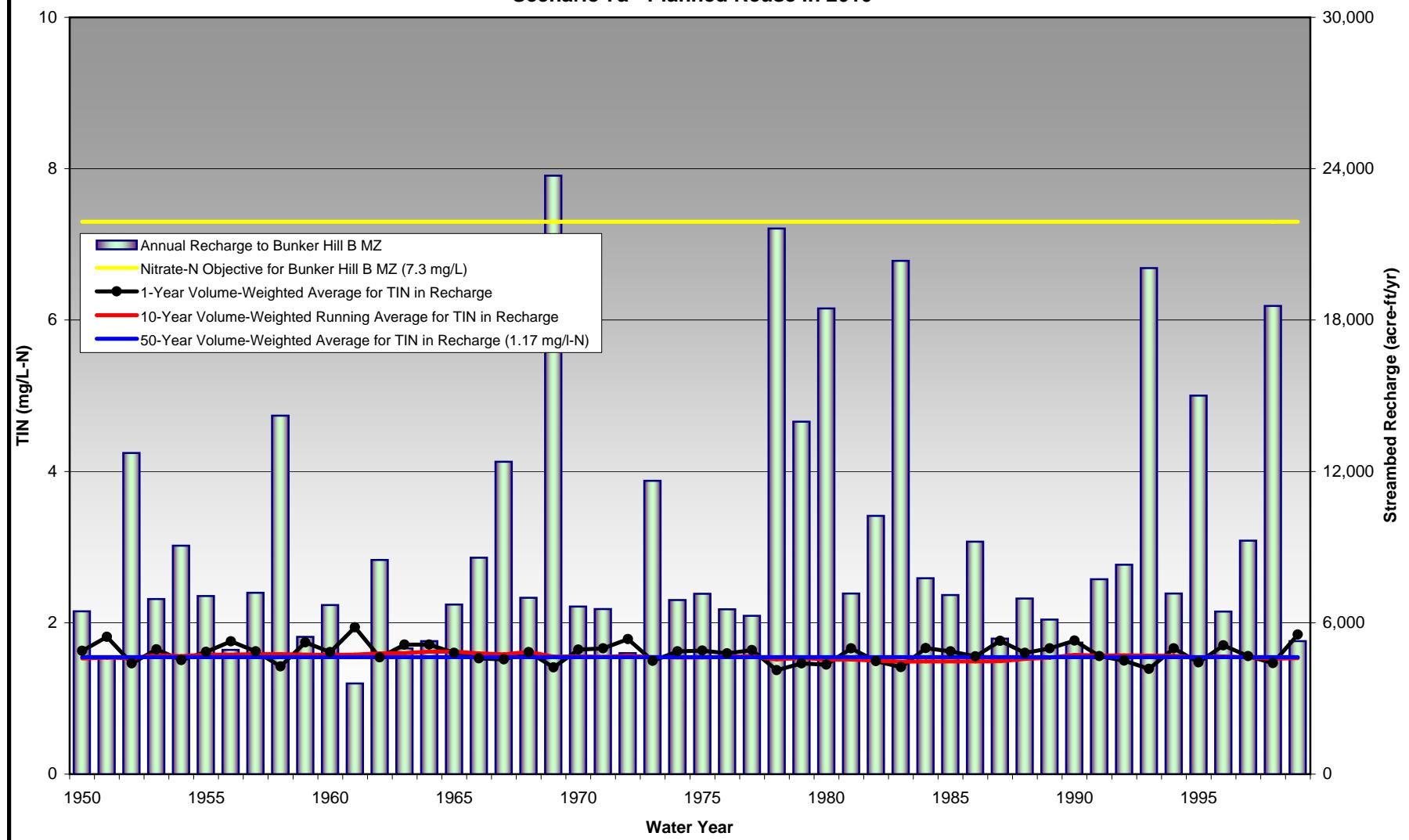


Table 7a-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 7a - Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	407	387	398	3.32	3.16	3.25
1951	475	393	398	3.87	3.21	3.25
1952	352	389	398	2.88	3.18	3.25
1953	428	406	398	3.49	3.32	3.25
1954	379	400	398	3.11	3.27	3.25
1955	423	408	398	3.45	3.33	3.25
1956	445	408	398	3.65	3.33	3.25
1957	427	411	398	3.48	3.36	3.25
1958	334	409	398	2.72	3.34	3.25
1959	454	406	398	3.71	3.32	3.25
1960	424	408	398	3.45	3.33	3.25
1961	481	408	398	3.94	3.33	3.25
1962	390	413	398	3.18	3.37	3.25
1963	449	415	398	3.67	3.39	3.25
1964	443	422	398	3.61	3.44	3.25
1965	413	421	398	3.36	3.43	3.25
1966	377	414	398	3.08	3.38	3.25
1967	363	407	398	2.98	3.32	3.25
1968	419	418	398	3.42	3.41	3.25
1969	312	400	398	2.56	3.27	3.25
1970	441	402	398	3.62	3.28	3.25
1971	443	399	398	3.62	3.26	3.25
1972	454	405	398	3.72	3.31	3.25
1973	366	396	398	2.97	3.24	3.25
1974	417	394	398	3.41	3.22	3.25
1975	417	395	398	3.40	3.23	3.25
1976	400	397	398	3.27	3.25	3.25
1977	428	404	398	3.50	3.30	3.25
1978	289	386	398	2.36	3.15	3.25
1979	352	391	398	2.87	3.20	3.25
1980	315	378	398	2.58	3.08	3.25
1981	447	378	398	3.65	3.09	3.25
1982	384	373	398	3.14	3.04	3.25
1983	312	366	398	2.54	2.99	3.25
1984	444	368	398	3.63	3.00	3.25
1985	427	368	398	3.48	3.01	3.25
1986	419	370	398	3.41	3.02	3.25
1987	471	372	398	3.85	3.04	3.25
1988	428	390	398	3.49	3.18	3.25
1989	454	400	398	3.71	3.26	3.25
1990	464	417	398	3.79	3.41	3.25
1991	394	412	398	3.22	3.37	3.25
1992	388	413	398	3.17	3.37	3.25
1993	296	410	398	2.43	3.35	3.25
1994	442	410	398	3.61	3.35	3.25
1995	351	401	398	2.88	3.28	3.25
1996	452	404	398	3.69	3.30	3.25
1997	391	397	398	3.19	3.25	3.25
1998	348	389	398	2.83	3.18	3.25
1999	494	391	398	4.04	3.20	3.25
Maximum	494	422		4.04	3.44	

San Timoteo Reach 3 defined here is equivalent to San Timoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 7a-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7a - Planned Reuse in 2010

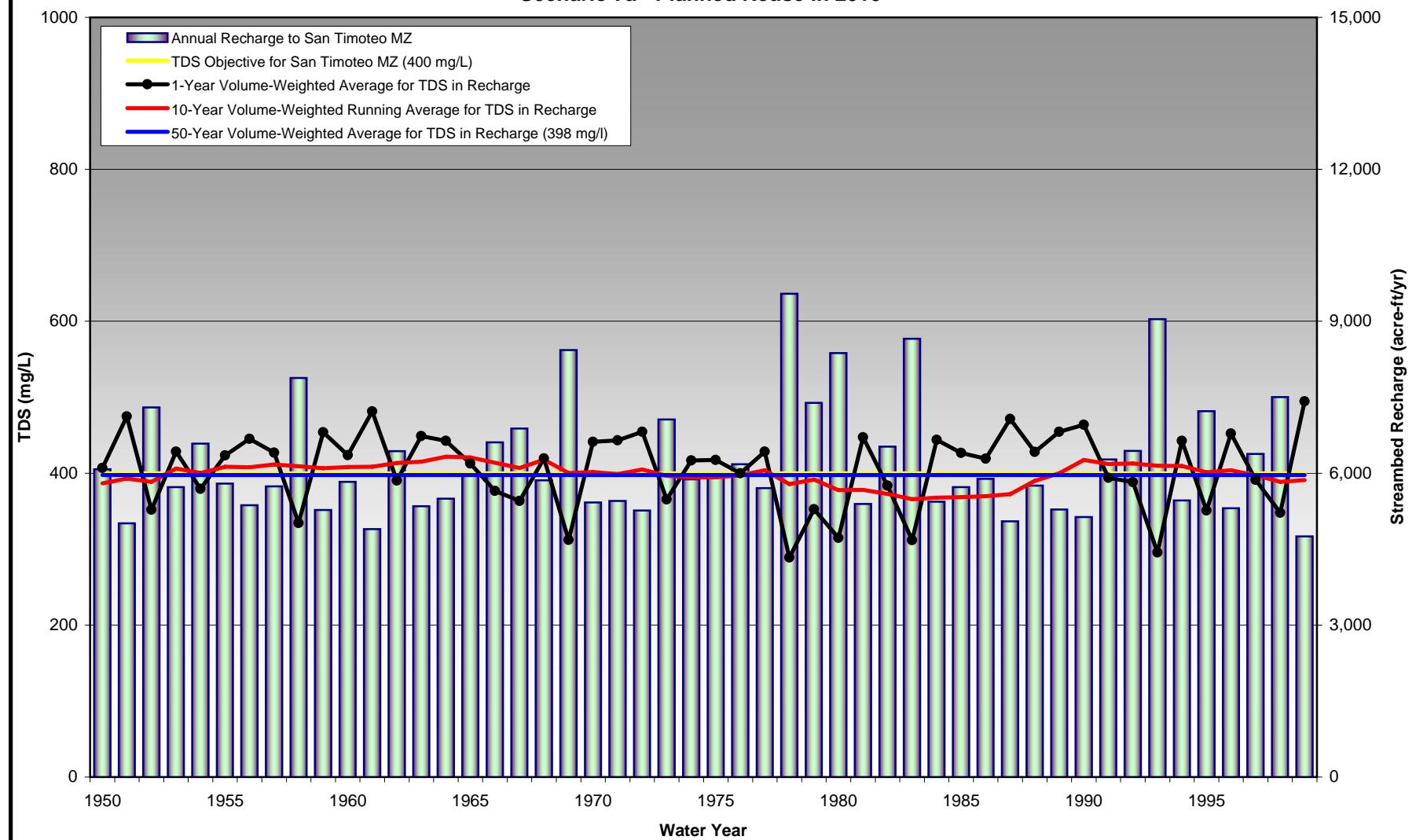


Figure 7a-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7a - Planned Reuse in 2010

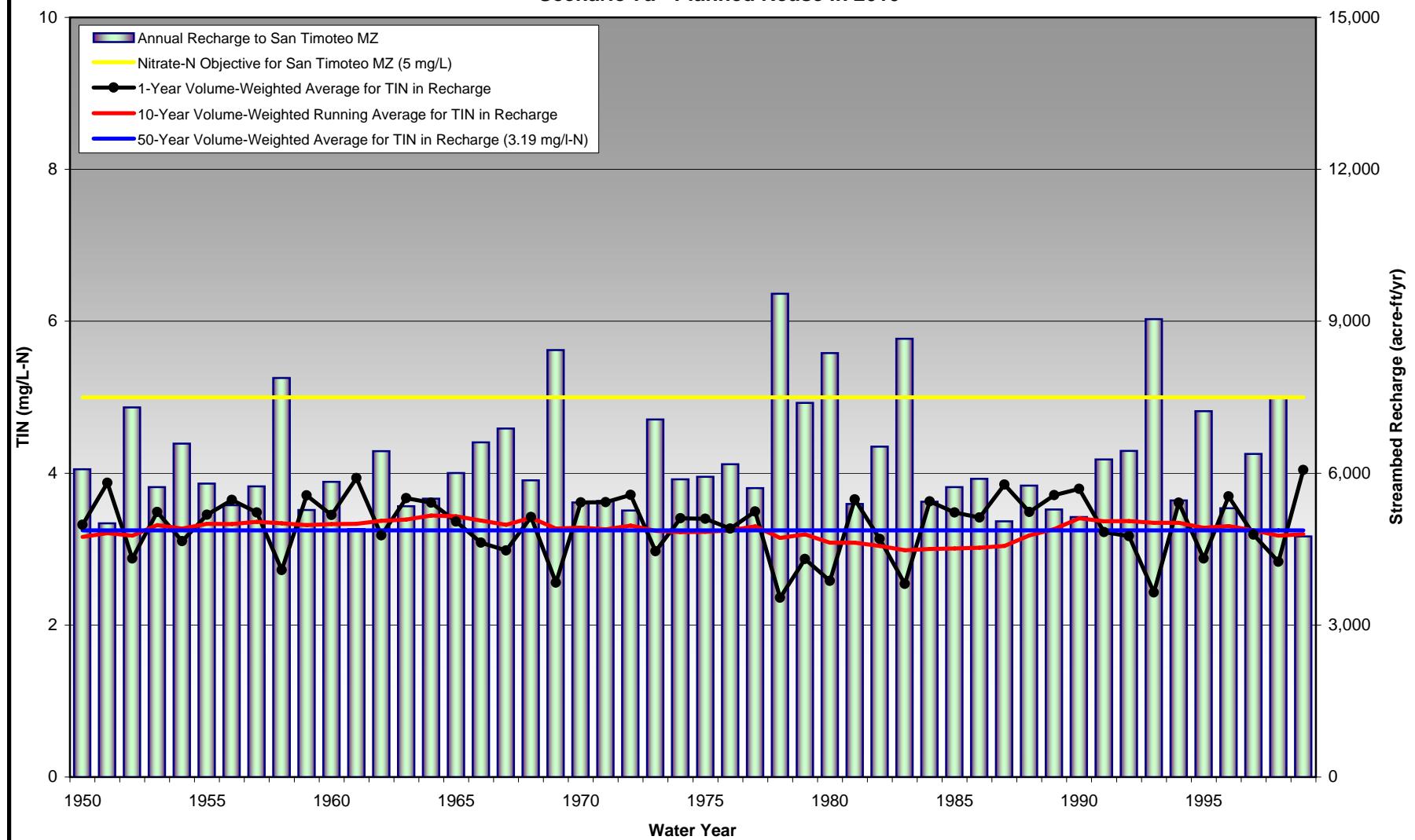


Table 7a-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 7a - Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	114	100	105	0.93	0.84	0.87
1951	154	101	105	1.17	0.85	0.87
1952	98	100	105	0.84	0.84	0.87
1953	138	104	105	1.09	0.87	0.87
1954	98	102	105	0.84	0.86	0.87
1955	125	108	105	1.01	0.90	0.87
1956	90	107	105	0.78	0.89	0.87
1957	121	108	105	0.98	0.90	0.87
1958	102	107	105	0.86	0.89	0.87
1959	127	107	105	1.01	0.89	0.87
1960	142	108	105	1.11	0.90	0.87
1961	148	107	105	1.14	0.89	0.87
1962	112	110	105	0.91	0.91	0.87
1963	119	109	105	0.96	0.90	0.87
1964	138	114	105	1.08	0.93	0.87
1965	116	113	105	0.93	0.92	0.87
1966	94	111	105	0.81	0.91	0.87
1967	92	107	105	0.80	0.89	0.87
1968	114	109	105	0.93	0.90	0.87
1969	89	102	105	0.77	0.86	0.87
1970	98	101	105	0.83	0.85	0.87
1971	119	101	105	0.95	0.85	0.87
1972	110	100	105	0.90	0.84	0.87
1973	120	101	105	0.97	0.85	0.87
1974	111	101	105	0.92	0.85	0.87
1975	125	101	105	1.00	0.85	0.87
1976	100	102	105	0.85	0.86	0.87
1977	121	105	105	0.99	0.88	0.87
1978	101	103	105	0.85	0.87	0.87
1979	110	109	105	0.91	0.90	0.87
1980	96	106	105	0.82	0.88	0.87
1981	138	107	105	1.09	0.89	0.87
1982	101	106	105	0.85	0.88	0.87
1983	102	104	105	0.85	0.87	0.87
1984	115	104	105	0.93	0.87	0.87
1985	116	104	105	0.94	0.87	0.87
1986	117	105	105	0.95	0.87	0.87
1987	147	105	105	1.14	0.87	0.87
1988	140	107	105	1.10	0.89	0.87
1989	142	107	105	1.11	0.89	0.87
1990	123	112	105	0.98	0.92	0.87
1991	98	109	105	0.83	0.90	0.87
1992	110	110	105	0.90	0.91	0.87
1993	91	105	105	0.79	0.88	0.87
1994	126	106	105	1.01	0.88	0.87
1995	87	101	105	0.75	0.85	0.87
1996	102	100	105	0.84	0.84	0.87
1997	106	100	105	0.88	0.84	0.87
1998	109	100	105	0.90	0.84	0.87
1999	163	99	105	1.20	0.84	0.87
Maximum	163	114		1.20	0.93	

Figure 7a-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7a - Planned Reuse in 2010

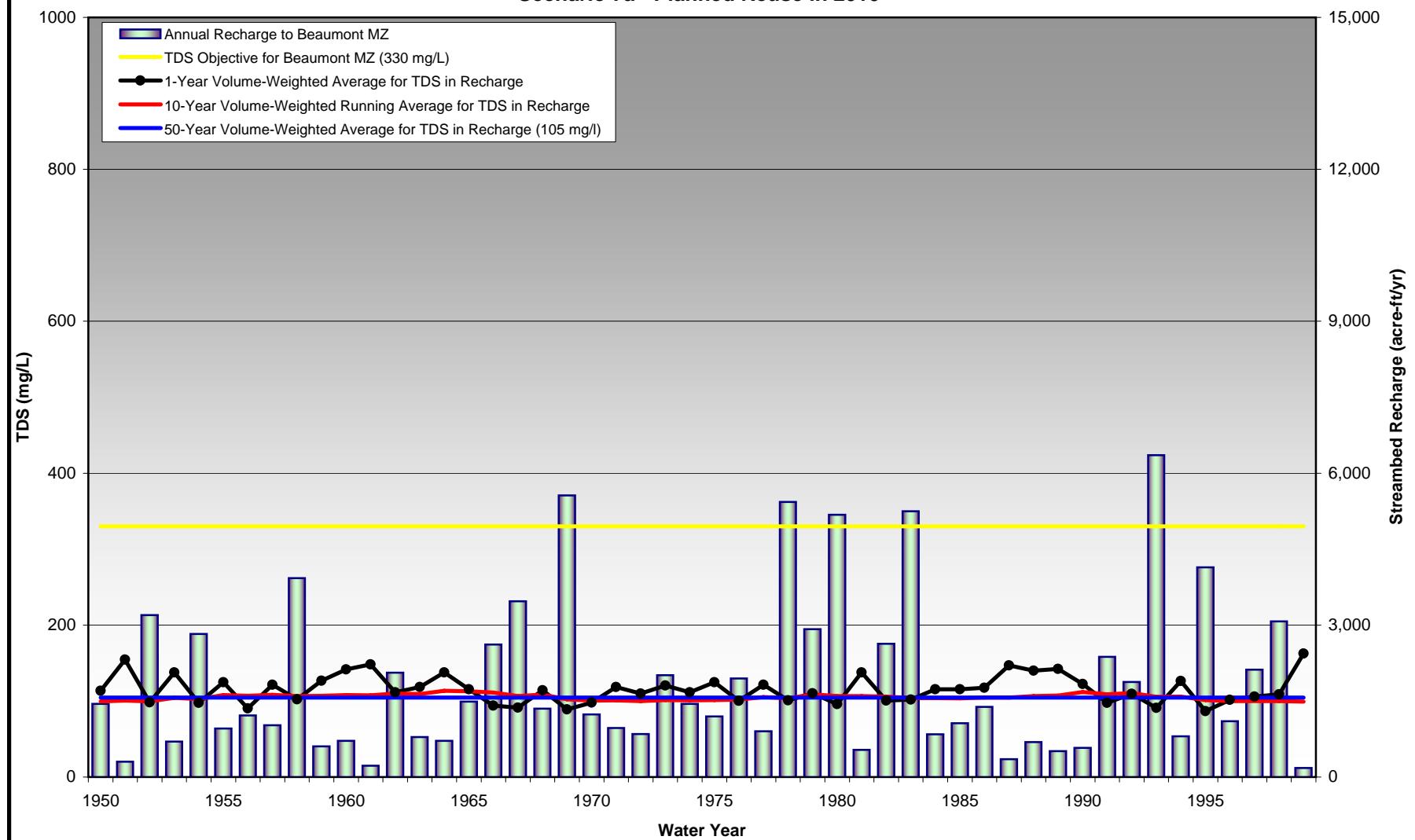


Figure 7a-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7a - Planned Reuse in 2010

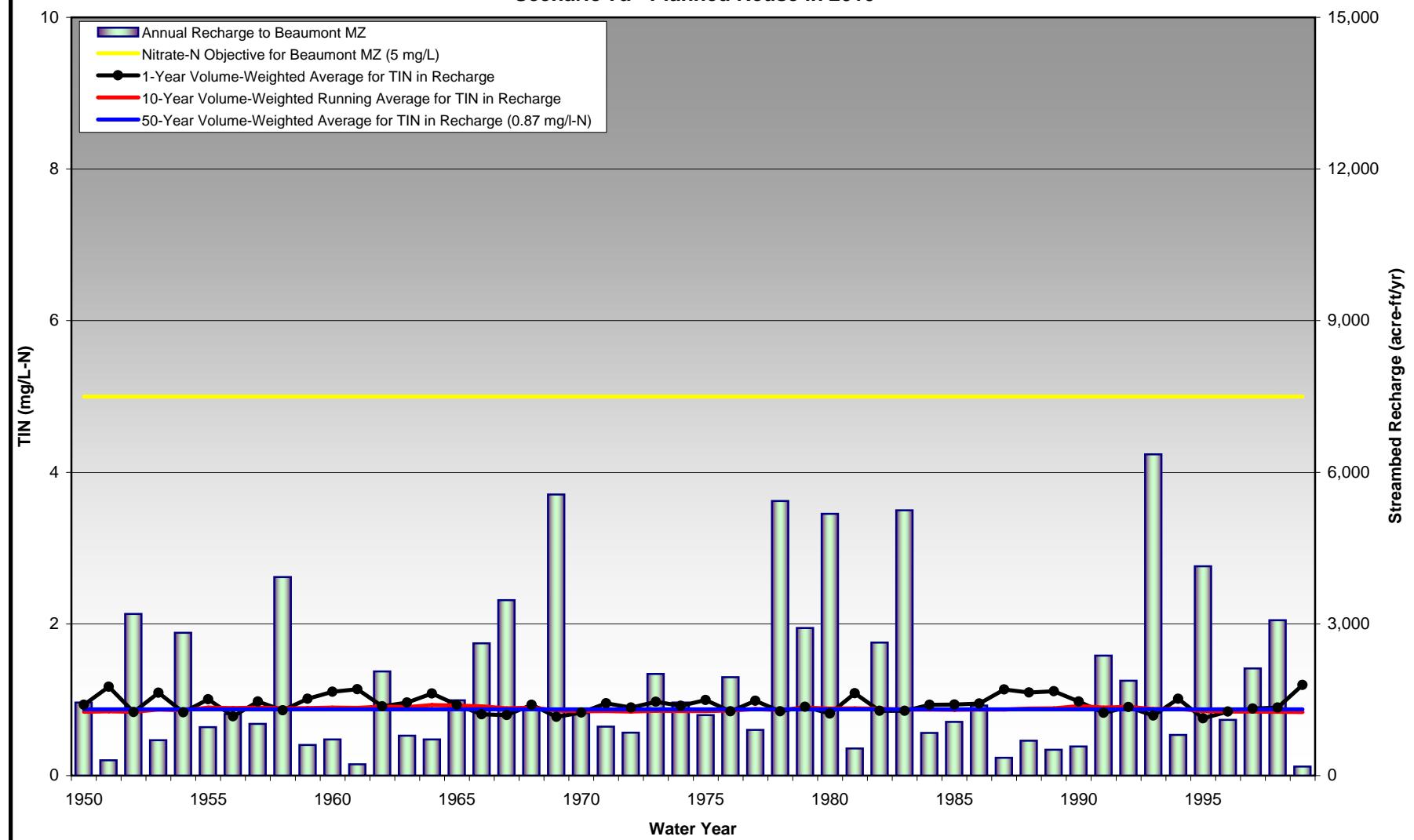


Table 7b-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 7b - Partial Planned Reuse in 2010

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only
1950	531	496	468	407	438	640	6.38	5.95	5.62	4.75	5.18	7.68
1951	607	517	483	418	438	640	7.32	6.21	5.79	4.88	5.18	7.67
1952	346	489	444	407	438	640	4.14	5.88	5.33	4.75	5.18	7.68
1953	572	536	502	453	438	640	6.87	6.44	6.04	5.39	5.18	7.67
1954	454	502	475	444	438	640	5.44	6.03	5.71	5.29	5.18	7.67
1955	542	504	477	473	438	639	6.52	6.06	5.73	5.67	5.18	7.66
1956	426	468	448	465	438	640	5.17	5.63	5.39	5.59	5.18	7.67
1957	552	509	501	470	438	640	6.64	6.13	6.03	5.65	5.18	7.67
1958	376	470	457	478	438	621	4.45	5.64	5.48	5.74	5.18	7.43
1959	602	500	479	477	438	640	7.26	6.01	5.75	5.73	5.18	7.67
1960	569	505	483	480	438	640	6.83	6.07	5.80	5.76	5.18	7.67
1961	630	546	520	481	438	629	7.61	6.56	6.23	5.78	5.18	7.52
1962	462	527	501	501	438	640	5.54	6.34	6.01	6.02	5.18	7.68
1963	514	555	546	496	438	640	6.19	6.69	6.58	5.96	5.18	7.67
1964	568	548	541	507	438	640	6.84	6.60	6.51	6.10	5.18	7.68
1965	520	539	531	505	438	633	6.23	6.48	6.39	6.07	5.18	7.58
1966	386	490	479	498	438	640	4.60	5.88	5.74	5.98	5.18	7.68
1967	345	466	444	470	438	631	4.09	5.59	5.31	5.63	5.18	7.56
1968	496	463	442	487	438	640	5.99	5.55	5.28	5.84	5.18	7.67
1969	241	398	353	420	438	626	2.76	4.73	4.17	5.01	5.18	7.48
1970	530	400	353	418	438	640	6.37	4.76	4.18	4.99	5.18	7.67
1971	543	431	370	415	438	639	6.52	5.15	4.38	4.94	5.18	7.66
1972	534	469	398	419	438	624	6.43	5.61	4.73	5.00	5.18	7.47
1973	449	459	392	415	438	640	5.35	5.49	4.65	4.94	5.18	7.68
1974	481	507	503	410	438	641	5.79	6.09	6.04	4.88	5.18	7.68
1975	540	509	505	411	438	641	6.49	6.12	6.07	4.90	5.18	7.68
1976	540	509	505	424	438	641	6.48	6.11	6.06	5.05	5.18	7.68
1977	536	509	505	443	438	376	6.45	6.11	6.06	5.29	5.18	4.41
1978	284	476	431	410	438	641	3.30	5.70	5.13	4.88	5.18	7.68
1979	425	465	421	457	438	641	5.00	5.54	5.00	5.46	5.18	7.68
1980	300	417	368	419	438	638	2.97	4.84	4.16	4.87	5.18	7.65
1981	572	423	370	421	438	641	6.89	4.92	4.18	4.89	5.18	7.68
1982	412	399	358	412	438	640	4.93	4.62	4.05	4.79	5.18	7.66
1983	336	409	374	398	438	461	3.69	4.70	4.18	4.59	5.18	5.44
1984	532	430	385	401	438	639	6.40	4.98	4.31	4.62	5.18	7.66
1985	520	475	445	400	438	641	6.25	5.63	5.22	4.61	5.18	7.68
1986	473	455	432	397	438	640	5.66	5.38	5.08	4.57	5.18	7.67
1987	591	490	459	399	438	641	7.13	5.82	5.39	4.59	5.18	7.68
1988	516	526	523	429	438	640	6.20	6.33	6.28	4.95	5.18	7.67
1989	569	534	529	439	438	641	6.85	6.42	6.36	5.07	5.18	7.68
1990	577	545	540	486	438	641	6.96	6.56	6.49	5.77	5.18	7.68
1991	420	535	524	471	438	640	5.03	6.43	6.30	5.60	5.18	7.67
1992	439	504	493	475	438	641	5.25	6.05	5.92	5.64	5.18	7.68
1993	276	456	400	449	438	640	2.88	5.39	4.62	5.29	5.18	7.67
1994	568	456	400	451	438	641	6.82	5.39	4.62	5.31	5.18	7.68
1995	335	407	366	428	438	641	3.74	4.74	4.17	5.00	5.18	7.68
1996	499	423	375	430	438	641	6.03	4.94	4.27	5.02	5.18	7.68
1997	485	433	380	425	438	641	5.79	5.05	4.32	4.96	5.18	7.68
1998	340	445	415	407	438	629	4.04	5.28	4.89	4.75	5.18	7.53
1999	622	456	419	409	438	641	7.51	5.42	4.94	4.77	5.18	7.68
Maximum	630	555	546	507	438	641	7.61	6.69	6.58	6.10	5.18	7.68

Figure 7b-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7b - Partial Planned Reuse in 2010

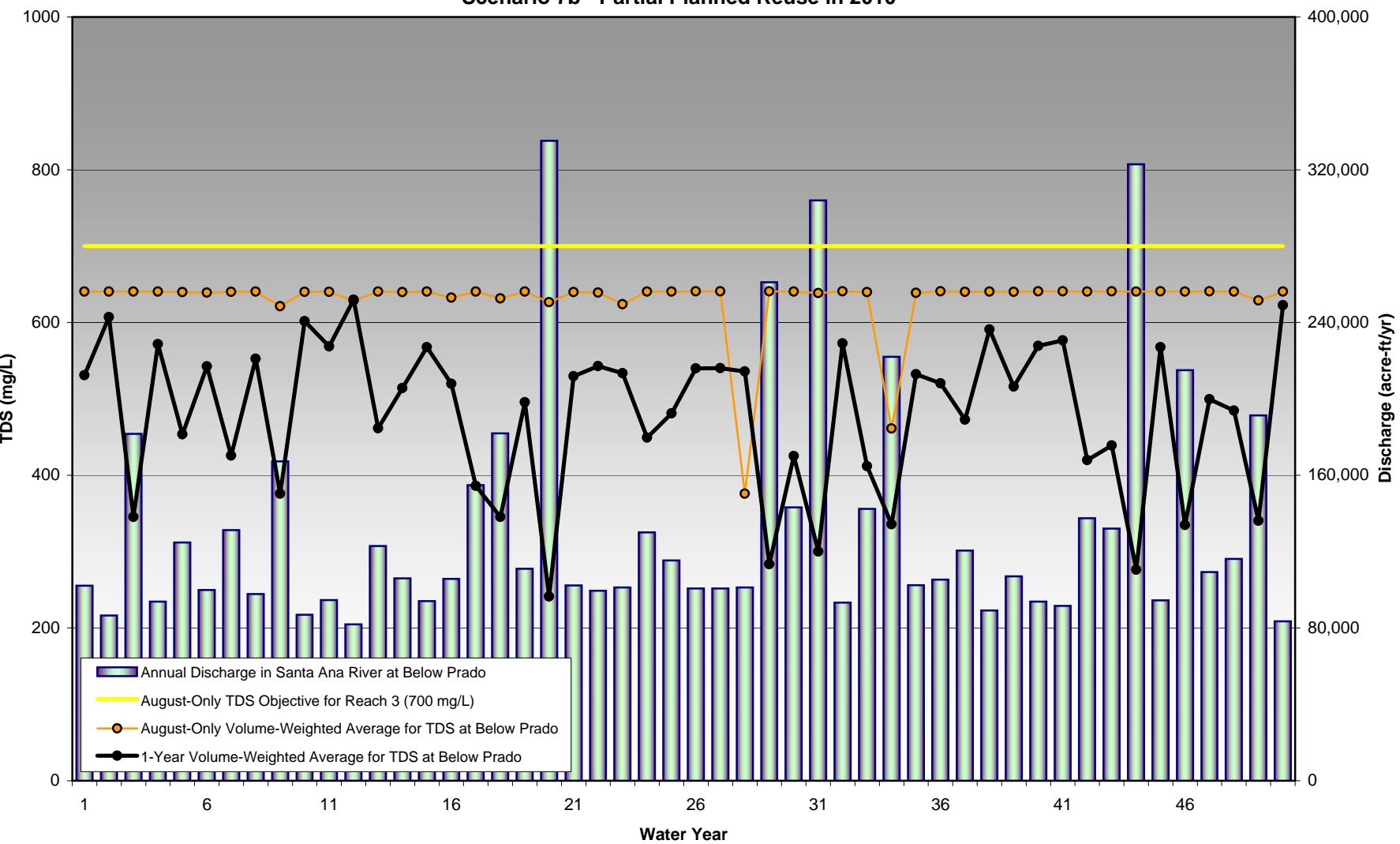


Figure 7b-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7b - Partial Planned Reuse in 2010

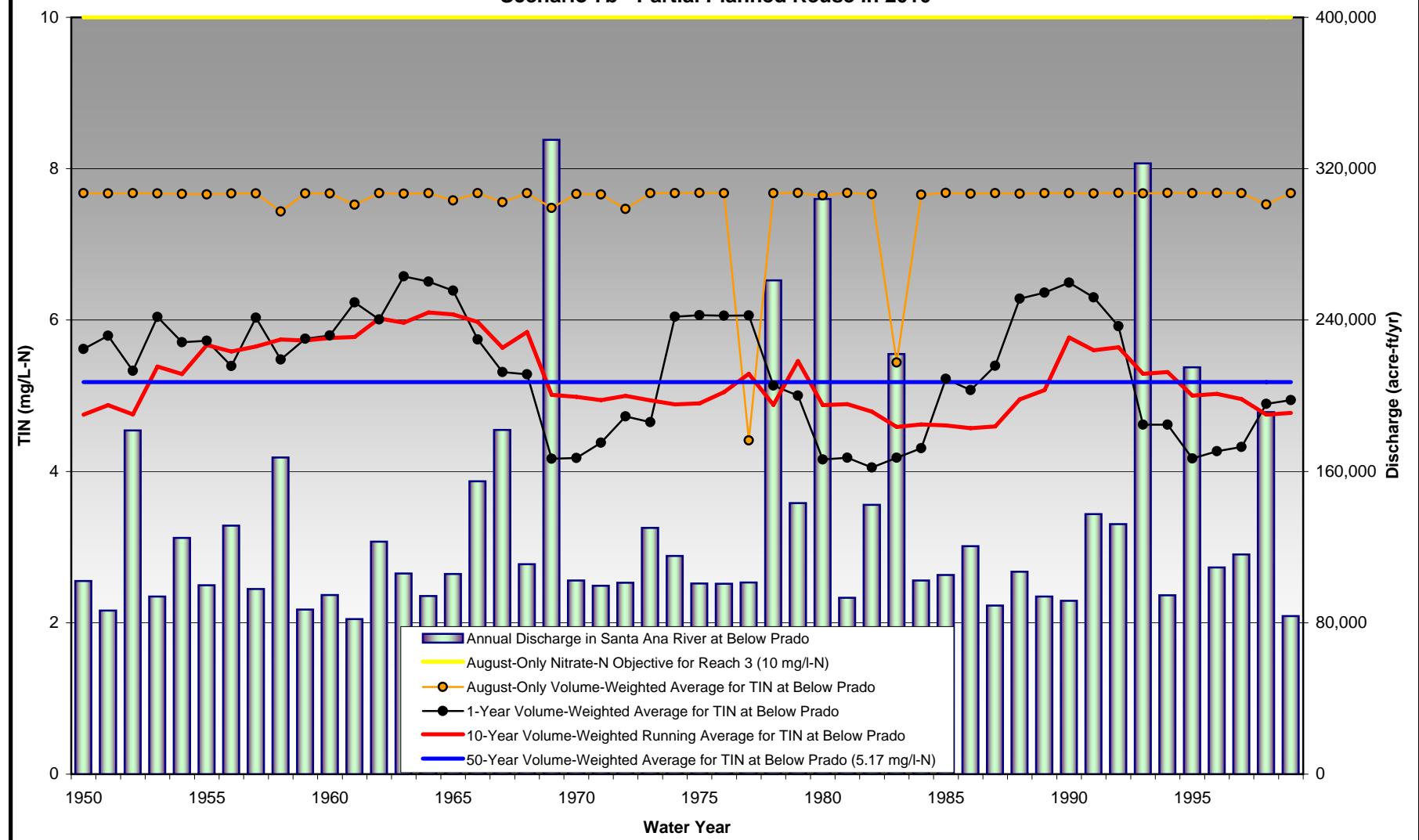


Figure 7b-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 7b - Partial Planned Reuse in 2010

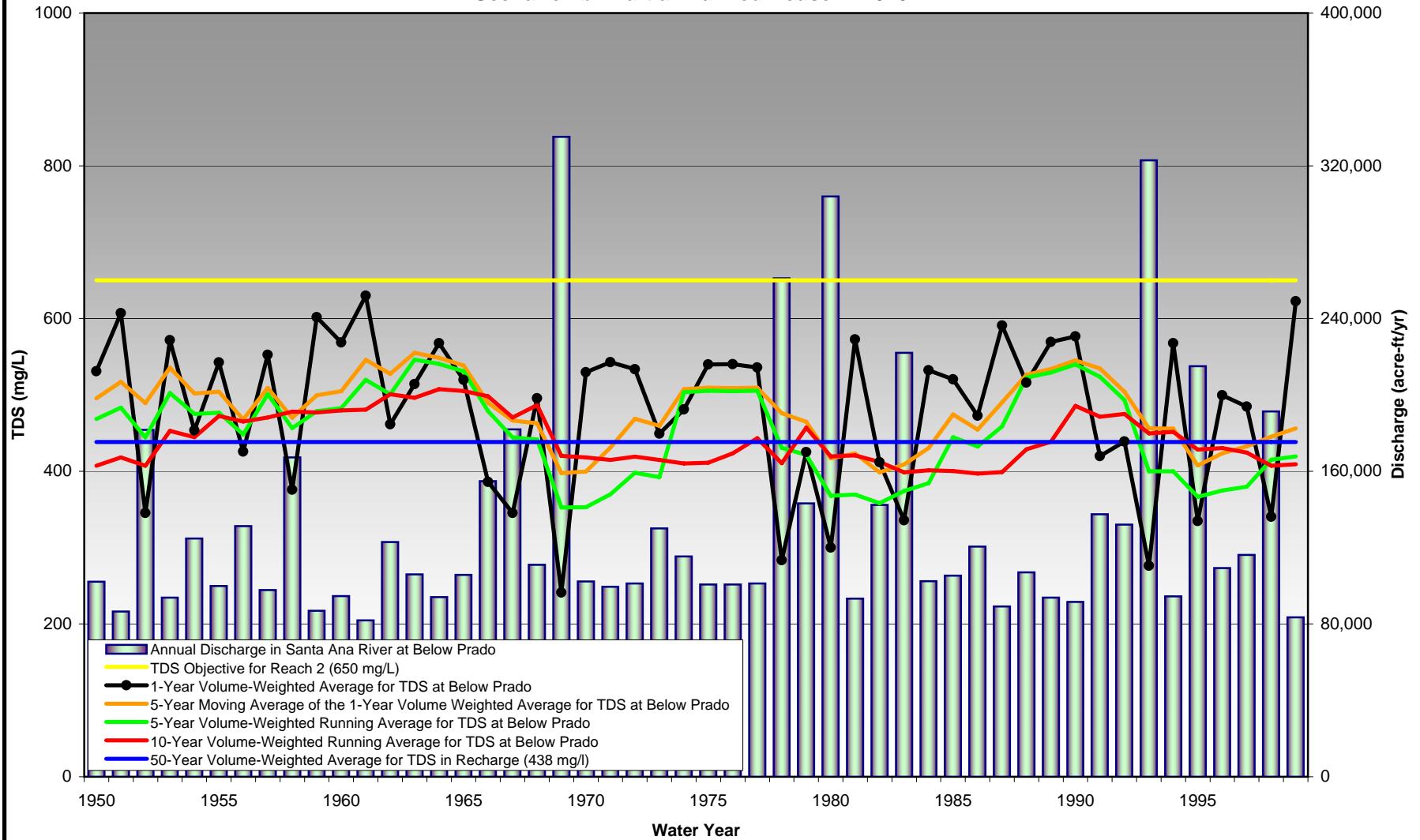


Table 7b-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 7b - Partial Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	620	571	590	4.20	3.83	3.97
1951	639	576	590	4.33	3.86	3.97
1952	541	571	590	3.65	3.83	3.97
1953	629	592	590	4.26	3.99	3.97
1954	592	589	590	4.00	3.97	3.97
1955	619	600	590	4.19	4.06	3.97
1956	608	599	590	4.12	4.05	3.97
1957	626	602	590	4.24	4.07	3.97
1958	546	604	590	3.67	4.09	3.97
1959	644	604	590	4.37	4.09	3.97
1960	634	606	590	4.30	4.10	3.97
1961	649	607	590	4.40	4.10	3.97
1962	597	613	590	4.04	4.15	3.97
1963	616	612	590	4.17	4.14	3.97
1964	633	616	590	4.29	4.17	3.97
1965	616	616	590	4.17	4.17	3.97
1966	569	611	590	3.83	4.14	3.97
1967	547	603	590	3.68	4.08	3.97
1968	615	610	590	4.17	4.13	3.97
1969	460	588	590	3.02	3.97	3.97
1970	624	587	590	4.22	3.96	3.97
1971	624	585	590	4.22	3.95	3.97
1972	628	588	590	4.25	3.97	3.97
1973	592	586	590	4.00	3.95	3.97
1974	607	583	590	4.10	3.93	3.97
1975	626	584	590	4.24	3.94	3.97
1976	617	589	590	4.17	3.97	3.97
1977	629	597	590	4.26	4.03	3.97
1978	479	582	590	3.17	3.92	3.97
1979	573	596	590	3.83	4.02	3.97
1980	482	580	590	3.08	3.89	3.97
1981	636	581	590	4.31	3.90	3.97
1982	572	576	590	3.86	3.86	3.97
1983	509	567	590	3.31	3.79	3.97
1984	619	568	590	4.19	3.79	3.97
1985	617	567	590	4.18	3.79	3.97
1986	605	566	590	4.09	3.78	3.97
1987	641	567	590	4.34	3.79	3.97
1988	621	583	590	4.21	3.90	3.97
1989	634	588	590	4.30	3.95	3.97
1990	631	606	590	4.27	4.09	3.97
1991	587	601	590	3.97	4.06	3.97
1992	586	603	590	3.95	4.07	3.97
1993	451	594	590	2.90	4.00	3.97
1994	628	594	590	4.25	4.00	3.97
1995	518	584	590	3.39	3.92	3.97
1996	622	585	590	4.22	3.93	3.97
1997	598	581	590	4.04	3.90	3.97
1998	523	571	590	3.50	3.83	3.97
1999	645	572	590	4.37	3.84	3.97
Maximum	649	616		4.40	4.17	

Figure 7b-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7b - Partial Planned Reuse in 2010

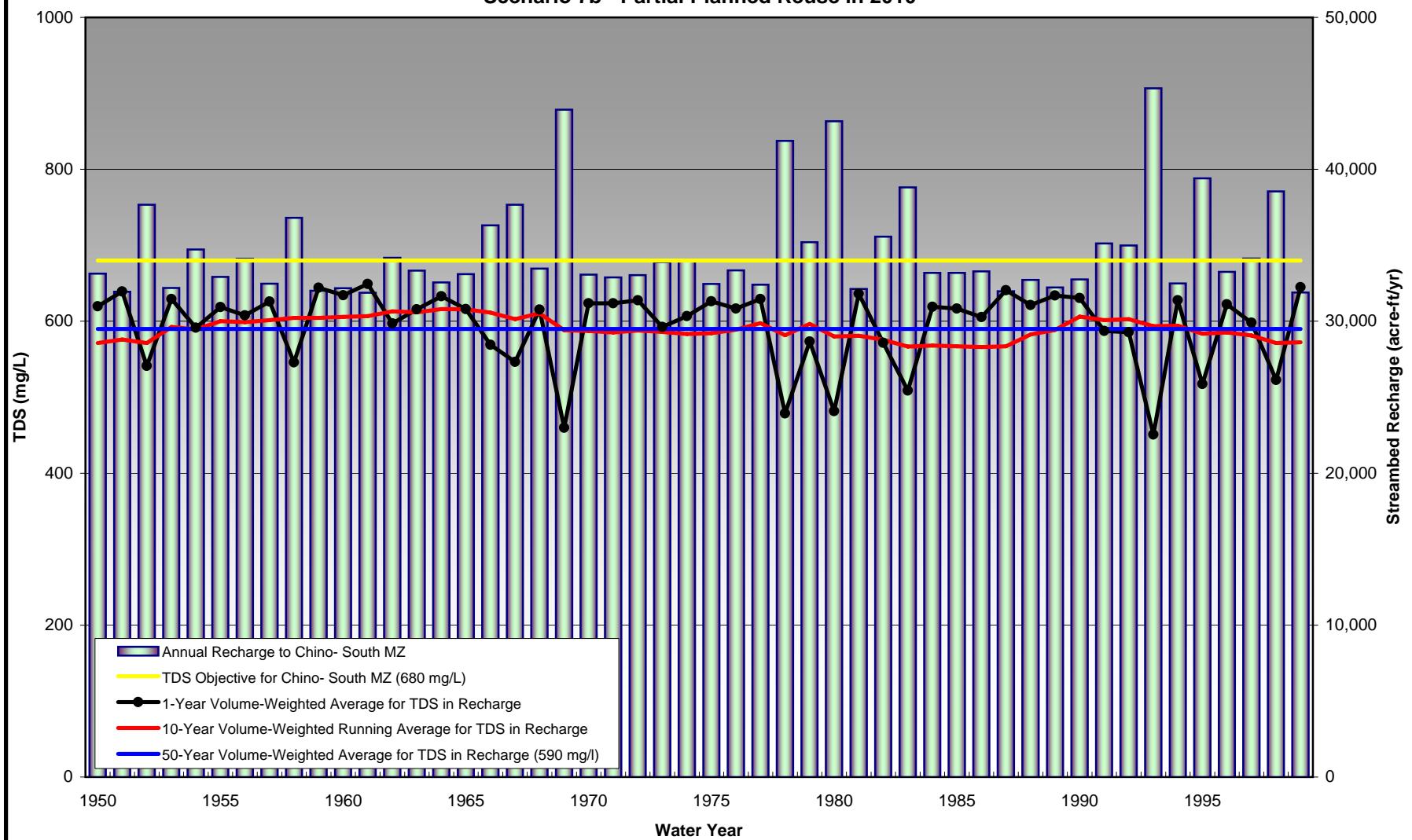


Figure 7b-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7b - Partial Planned Reuse in 2010

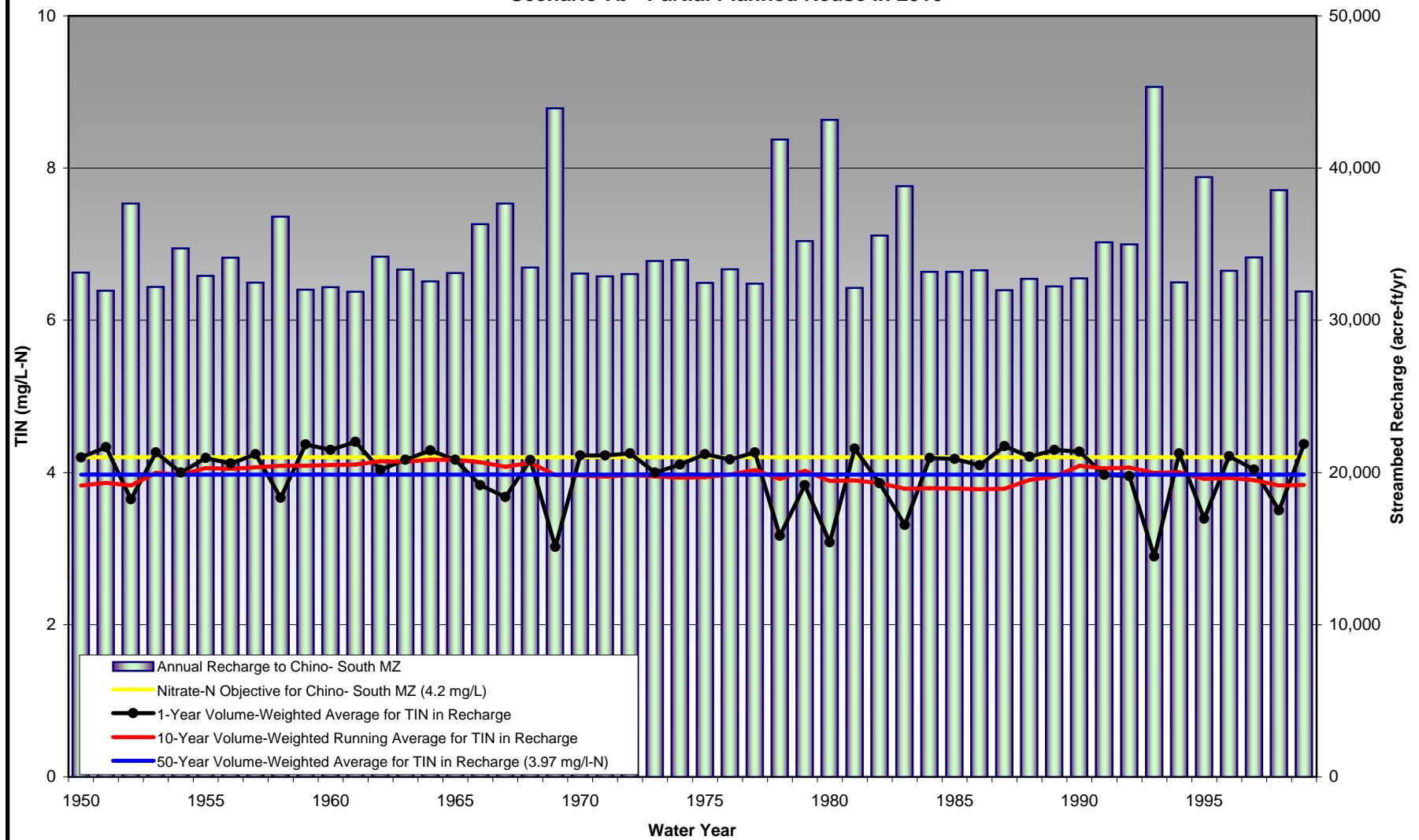


Table 7b-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 7b - Partial Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	451	385	413	6.10	5.04	5.49
1951	511	392	413	7.02	5.14	5.49
1952	356	388	413	4.68	5.08	5.49
1953	488	419	413	6.65	5.59	5.49
1954	412	414	413	5.51	5.51	5.49
1955	463	429	413	6.28	5.76	5.49
1956	460	430	413	6.28	5.77	5.49
1957	483	436	413	6.58	5.87	5.49
1958	351	439	413	4.50	5.91	5.49
1959	503	438	413	6.91	5.90	5.49
1960	501	442	413	6.85	5.96	5.49
1961	521	443	413	7.19	5.97	5.49
1962	418	452	413	5.61	6.11	5.49
1963	468	450	413	6.38	6.09	5.49
1964	483	458	413	6.59	6.20	5.49
1965	447	456	413	6.02	6.17	5.49
1966	384	447	413	5.05	6.02	5.49
1967	362	433	413	4.73	5.81	5.49
1968	452	446	413	6.13	6.02	5.49
1969	277	412	413	3.26	5.47	5.49
1970	455	409	413	6.18	5.42	5.49
1971	454	405	413	6.14	5.36	5.49
1972	480	410	413	6.55	5.43	5.49
1973	417	405	413	5.53	5.36	5.49
1974	439	402	413	5.93	5.32	5.49
1975	480	404	413	6.53	5.35	5.49
1976	445	410	413	6.01	5.44	5.49
1977	481	422	413	6.56	5.63	5.49
1978	293	400	413	3.54	5.26	5.49
1979	401	423	413	5.31	5.63	5.49
1980	292	398	413	3.51	5.24	5.49
1981	499	401	413	6.83	5.28	5.49
1982	385	393	413	5.11	5.16	5.49
1983	313	381	413	3.92	4.97	5.49
1984	458	382	413	6.21	4.99	5.49
1985	467	381	413	6.34	4.98	5.49
1986	448	381	413	6.03	4.98	5.49
1987	509	383	413	6.99	5.00	5.49
1988	470	404	413	6.38	5.34	5.49
1989	480	410	413	6.53	5.44	5.49
1990	482	439	413	6.58	5.91	5.49
1991	408	431	413	5.45	5.78	5.49
1992	393	432	413	5.20	5.79	5.49
1993	269	417	413	3.14	5.55	5.49
1994	476	419	413	6.47	5.57	5.49
1995	335	404	413	4.25	5.33	5.49
1996	456	405	413	6.17	5.35	5.49
1997	412	398	413	5.47	5.24	5.49
1998	336	385	413	4.25	5.04	5.49
1999	518	387	413	7.13	5.07	5.49
Maximum	521	458		7.19	6.20	

Figure 7b-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7b - Partial Planned Reuse in 2010

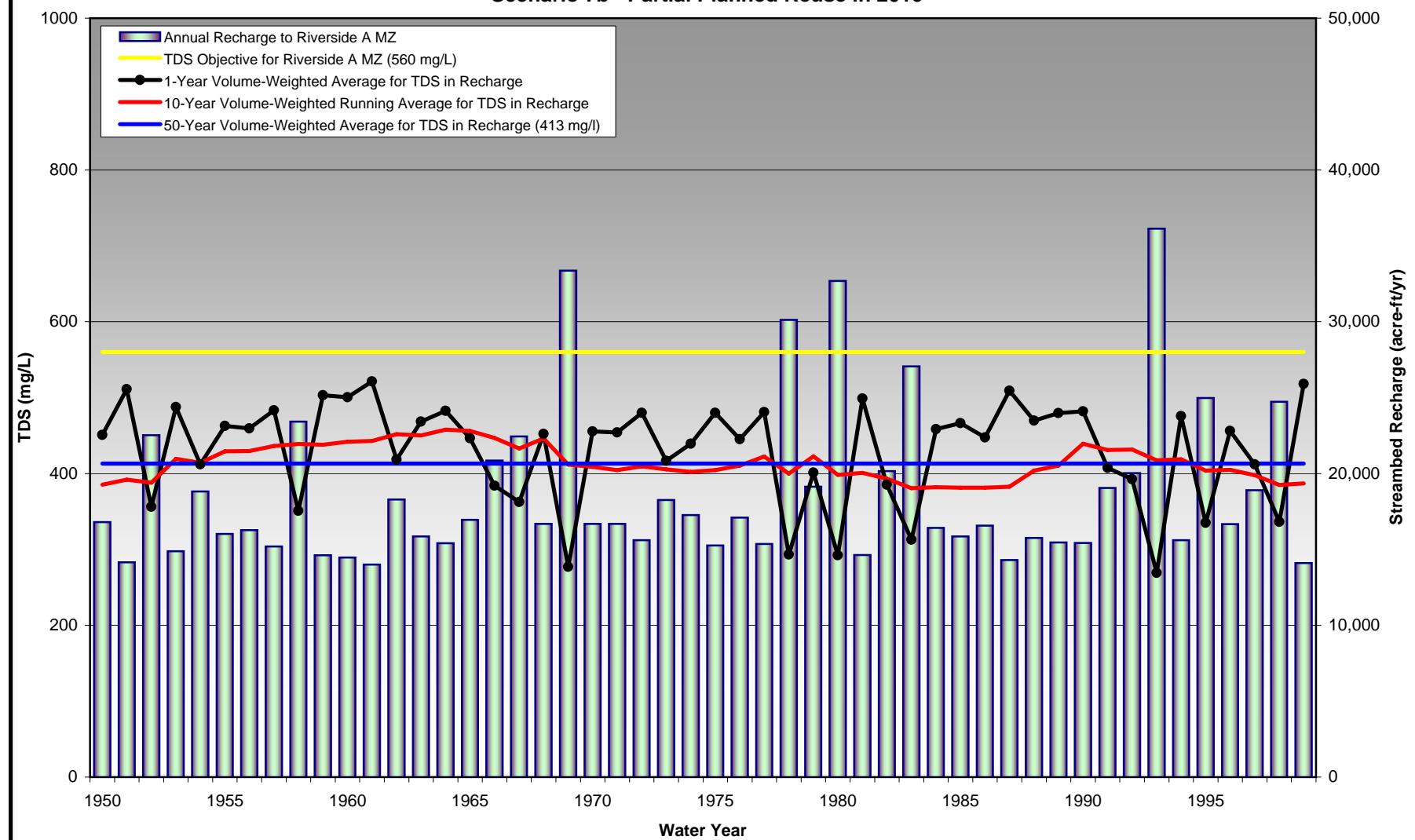


Figure 7b-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7b - Partial Planned Reuse in 2010

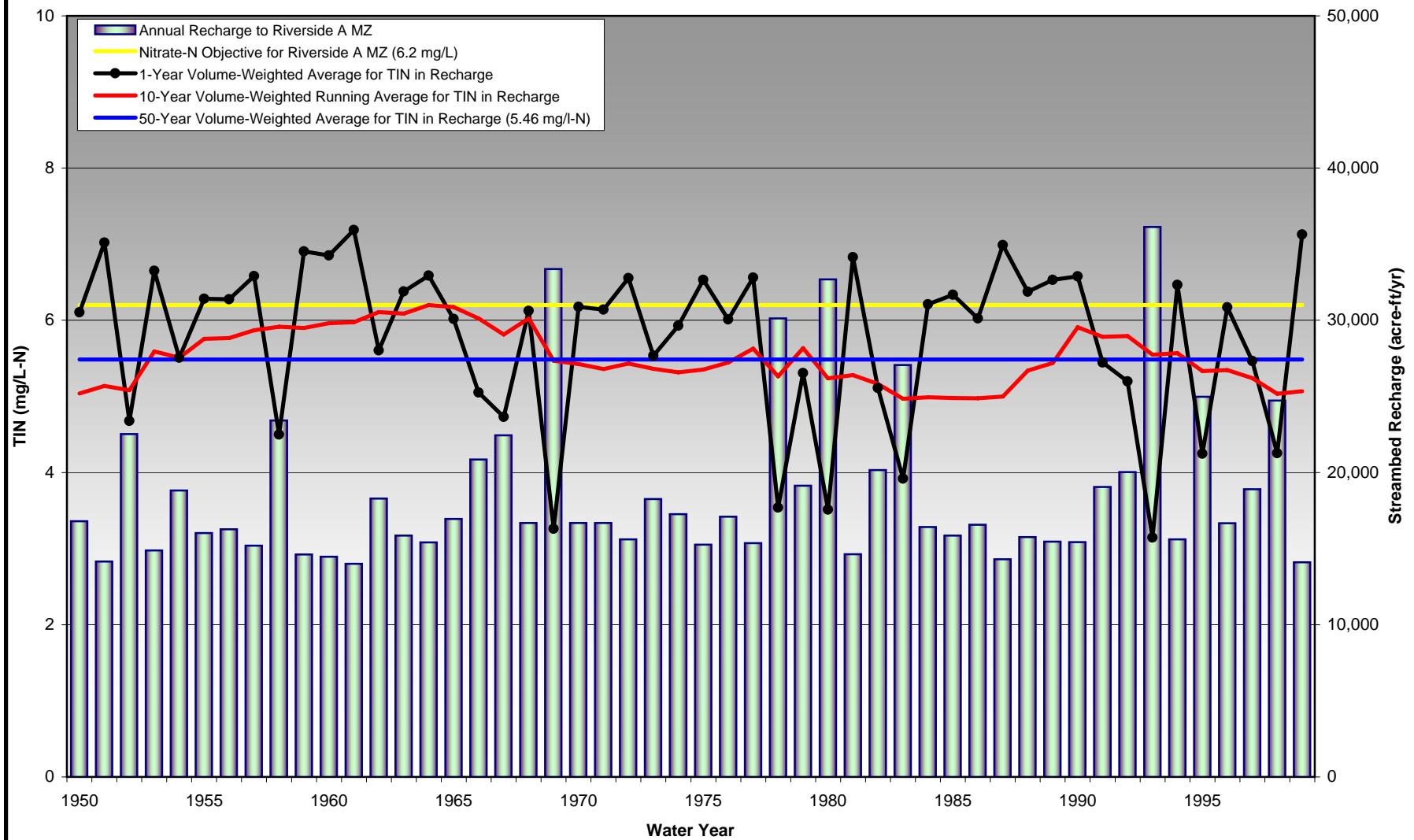


Table 7b-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 7b - Partial Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	142	153	152	1.14	1.18	1.17
1951	165	155	152	1.25	1.18	1.17
1952	139	154	152	1.12	1.18	1.17
1953	160	154	152	1.22	1.19	1.17
1954	142	152	152	1.14	1.18	1.17
1955	148	152	152	1.18	1.18	1.17
1956	127	150	152	1.05	1.17	1.17
1957	159	150	152	1.22	1.18	1.17
1958	152	147	152	1.18	1.16	1.17
1959	166	147	152	1.25	1.16	1.17
1960	156	148	152	1.20	1.16	1.17
1961	162	148	152	1.23	1.16	1.17
1962	146	149	152	1.15	1.17	1.17
1963	136	148	152	1.10	1.16	1.17
1964	153	149	152	1.18	1.17	1.17
1965	148	149	152	1.15	1.16	1.17
1966	140	149	152	1.11	1.16	1.17
1967	145	148	152	1.14	1.15	1.17
1968	142	146	152	1.12	1.14	1.17
1969	160	151	152	1.20	1.17	1.17
1970	140	150	152	1.13	1.16	1.17
1971	147	150	152	1.17	1.16	1.17
1972	150	150	152	1.17	1.16	1.17
1973	155	151	152	1.21	1.17	1.17
1974	140	151	152	1.11	1.17	1.17
1975	162	151	152	1.23	1.17	1.17
1976	137	152	152	1.09	1.17	1.17
1977	148	153	152	1.15	1.18	1.17
1978	156	154	152	1.18	1.18	1.17
1979	153	151	152	1.18	1.17	1.17
1980	157	153	152	1.19	1.18	1.17
1981	168	154	152	1.26	1.18	1.17
1982	131	152	152	1.07	1.17	1.17
1983	155	153	152	1.20	1.17	1.17
1984	160	153	152	1.22	1.18	1.17
1985	148	153	152	1.14	1.18	1.17
1986	157	154	152	1.20	1.18	1.17
1987	167	154	152	1.26	1.18	1.17
1988	152	154	152	1.17	1.18	1.17
1989	159	154	152	1.22	1.19	1.17
1990	154	152	152	1.18	1.18	1.17
1991	138	150	152	1.11	1.17	1.17
1992	136	151	152	1.09	1.17	1.17
1993	156	152	152	1.18	1.17	1.17
1994	162	152	152	1.23	1.17	1.17
1995	153	153	152	1.17	1.17	1.17
1996	157	152	152	1.19	1.17	1.17
1997	152	152	152	1.18	1.17	1.17
1998	159	153	152	1.22	1.18	1.17
1999	182	154	152	1.33	1.18	1.17
Maximum	182	155		1.33	1.19	

Figure 7b-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7b - Partial Planned Reuse in 2010

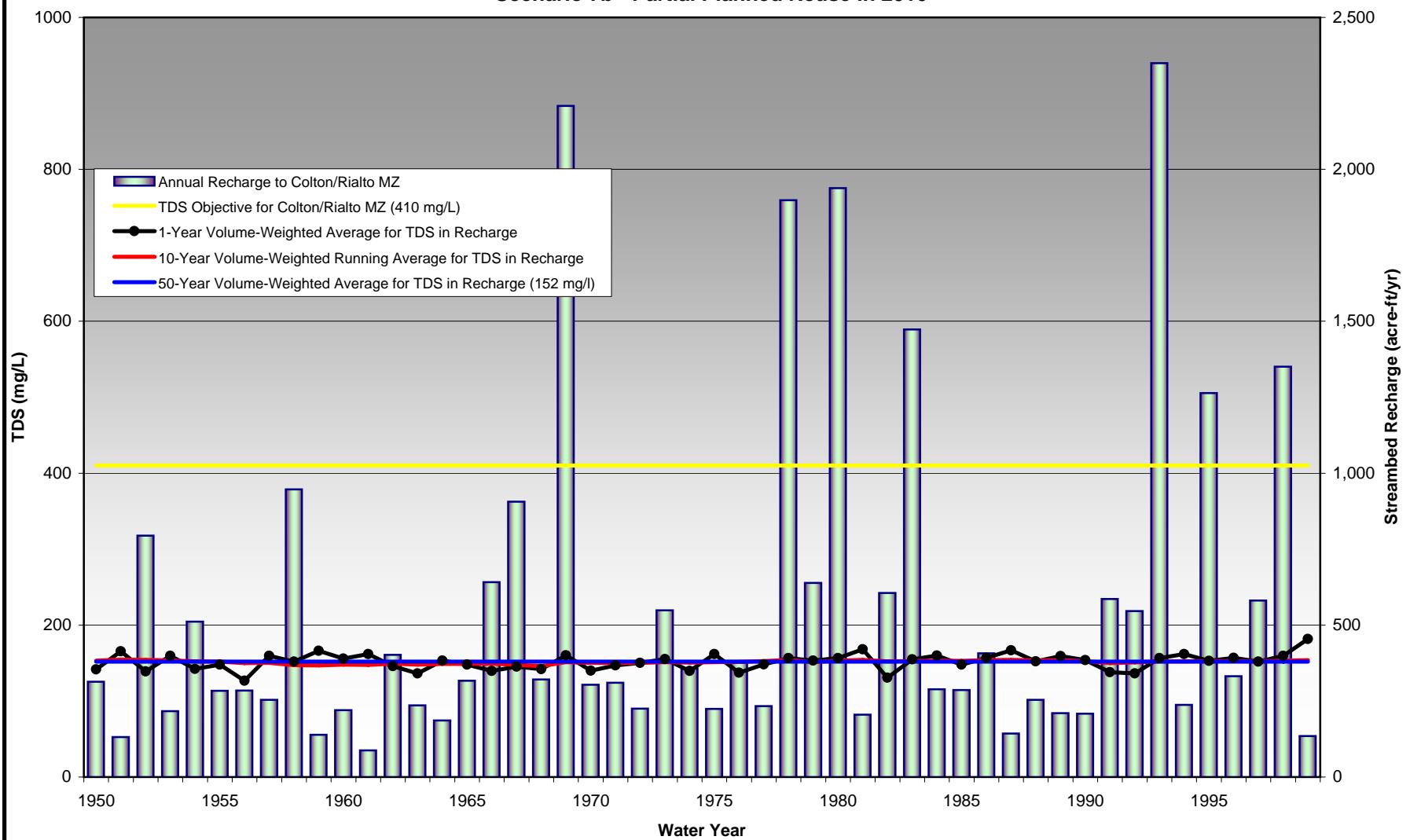


Figure 7b-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7b - Partial Planned Reuse in 2010

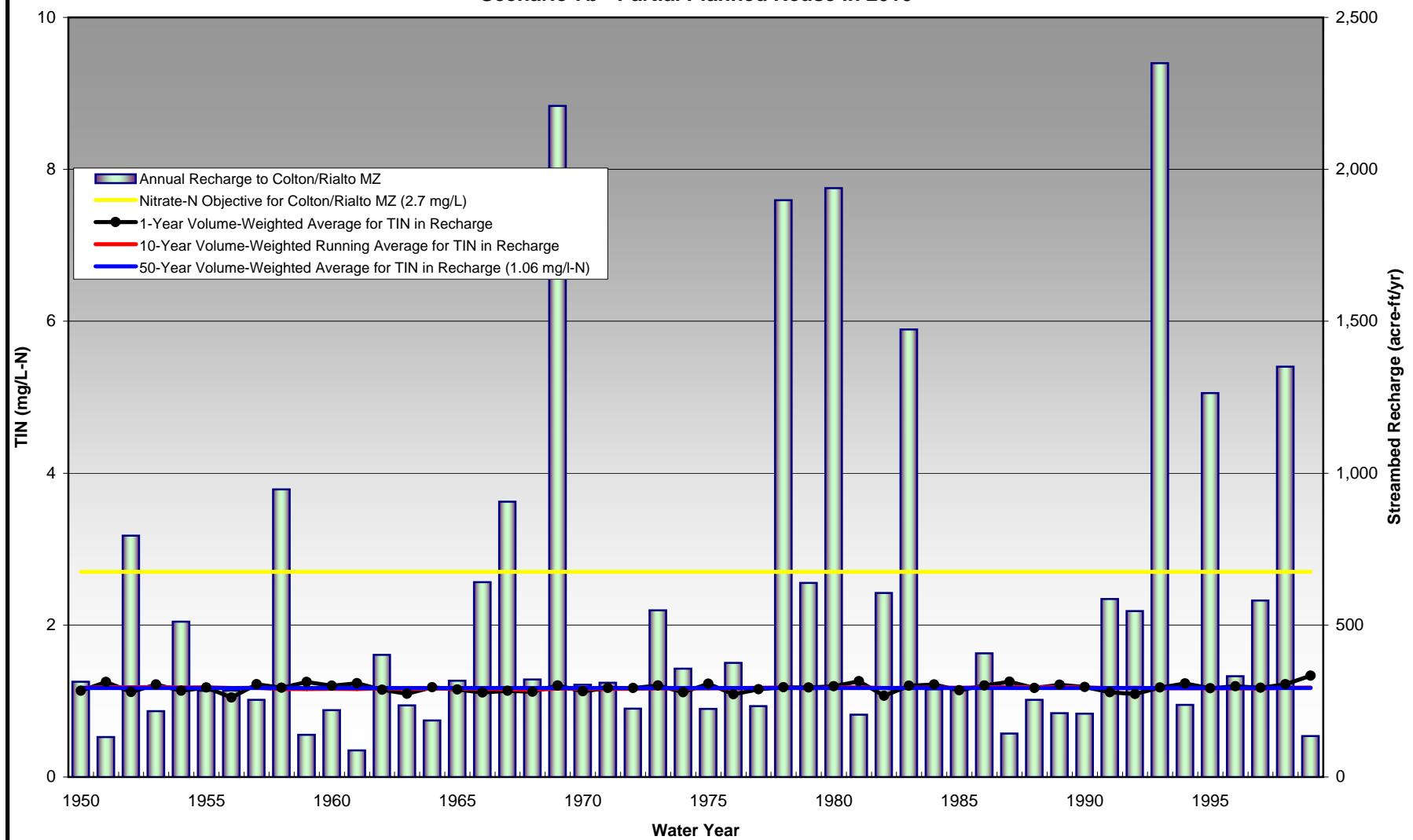


Table 7b-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 7b - Partial Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	223	210	212	1.70	1.57	1.60
1951	251	212	212	1.90	1.58	1.60
1952	198	211	212	1.50	1.58	1.60
1953	227	216	212	1.71	1.62	1.60
1954	205	214	212	1.56	1.61	1.60
1955	221	216	212	1.68	1.63	1.60
1956	241	216	212	1.84	1.63	1.60
1957	223	217	212	1.69	1.64	1.60
1958	193	217	212	1.46	1.64	1.60
1959	241	216	212	1.82	1.63	1.60
1960	221	216	212	1.68	1.63	1.60
1961	270	216	212	2.05	1.64	1.60
1962	211	219	212	1.60	1.66	1.60
1963	236	219	212	1.80	1.66	1.60
1964	236	222	212	1.79	1.68	1.60
1965	219	222	212	1.67	1.68	1.60
1966	208	219	212	1.58	1.66	1.60
1967	207	217	212	1.55	1.64	1.60
1968	221	222	212	1.68	1.68	1.60
1969	195	214	212	1.43	1.61	1.60
1970	225	214	212	1.71	1.61	1.60
1971	228	213	212	1.73	1.60	1.60
1972	247	215	212	1.87	1.61	1.60
1973	203	212	212	1.54	1.59	1.60
1974	222	212	212	1.69	1.59	1.60
1975	225	212	212	1.69	1.59	1.60
1976	219	213	212	1.67	1.60	1.60
1977	225	215	212	1.71	1.61	1.60
1978	189	209	212	1.40	1.56	1.60
1979	199	211	212	1.50	1.59	1.60
1980	197	207	212	1.47	1.56	1.60
1981	230	208	212	1.72	1.56	1.60
1982	202	205	212	1.54	1.54	1.60
1983	191	203	212	1.44	1.53	1.60
1984	230	204	212	1.72	1.53	1.60
1985	224	204	212	1.69	1.53	1.60
1986	213	204	212	1.60	1.53	1.60
1987	244	204	212	1.84	1.53	1.60
1988	220	208	212	1.67	1.57	1.60
1989	229	211	212	1.73	1.59	1.60
1990	244	216	212	1.84	1.63	1.60
1991	212	215	212	1.62	1.62	1.60
1992	204	215	212	1.56	1.62	1.60
1993	191	215	212	1.41	1.62	1.60
1994	229	215	212	1.72	1.62	1.60
1995	203	212	212	1.51	1.59	1.60
1996	235	214	212	1.77	1.61	1.60
1997	214	212	212	1.61	1.59	1.60
1998	201	210	212	1.49	1.57	1.60
1999	256	211	212	1.92	1.58	1.60
Maximum	270	222		2.05	1.68	

Figure 7b-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7b - Partial Planned Reuse in 2010

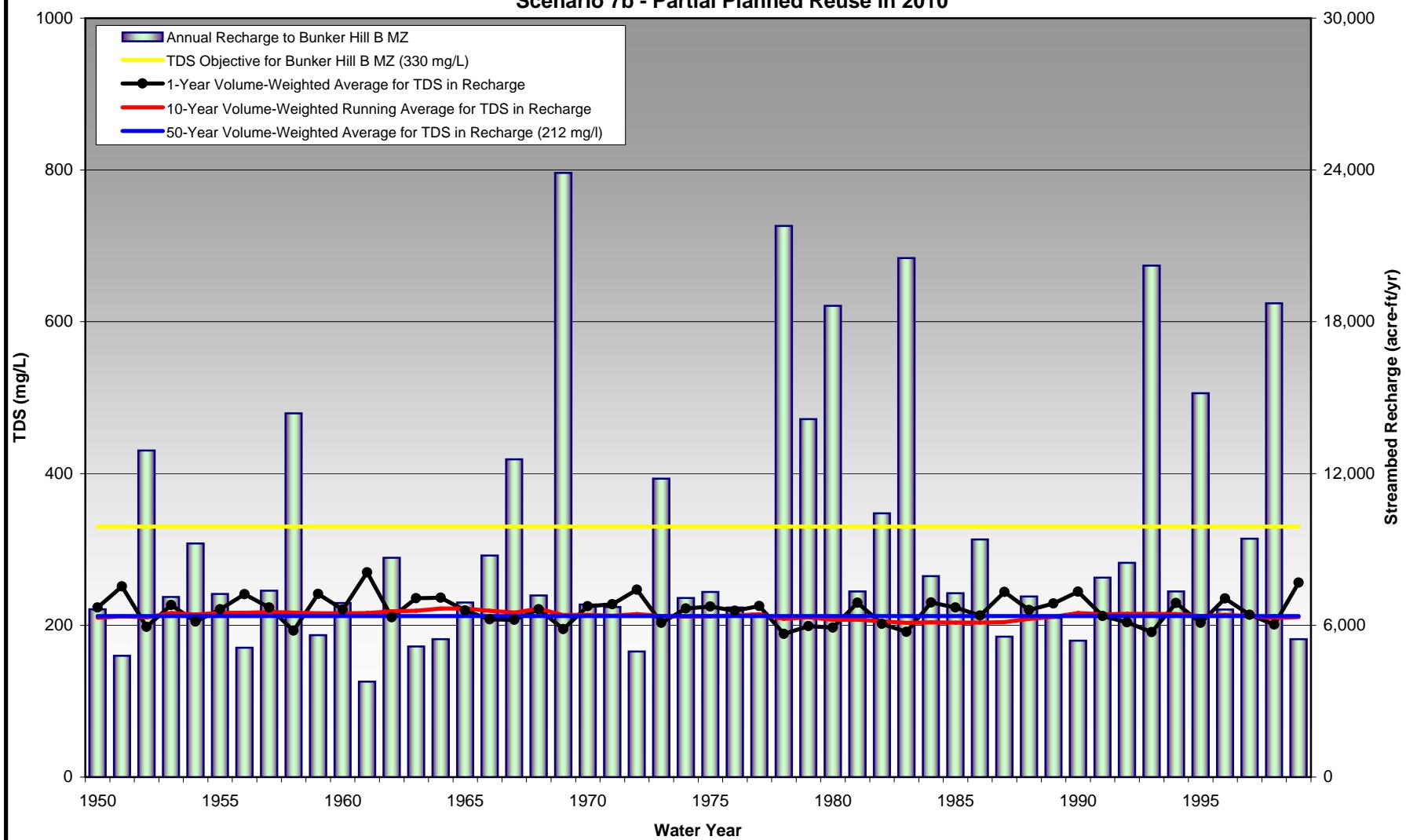


Figure 7b-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7b - Partial Planned Reuse in 2010

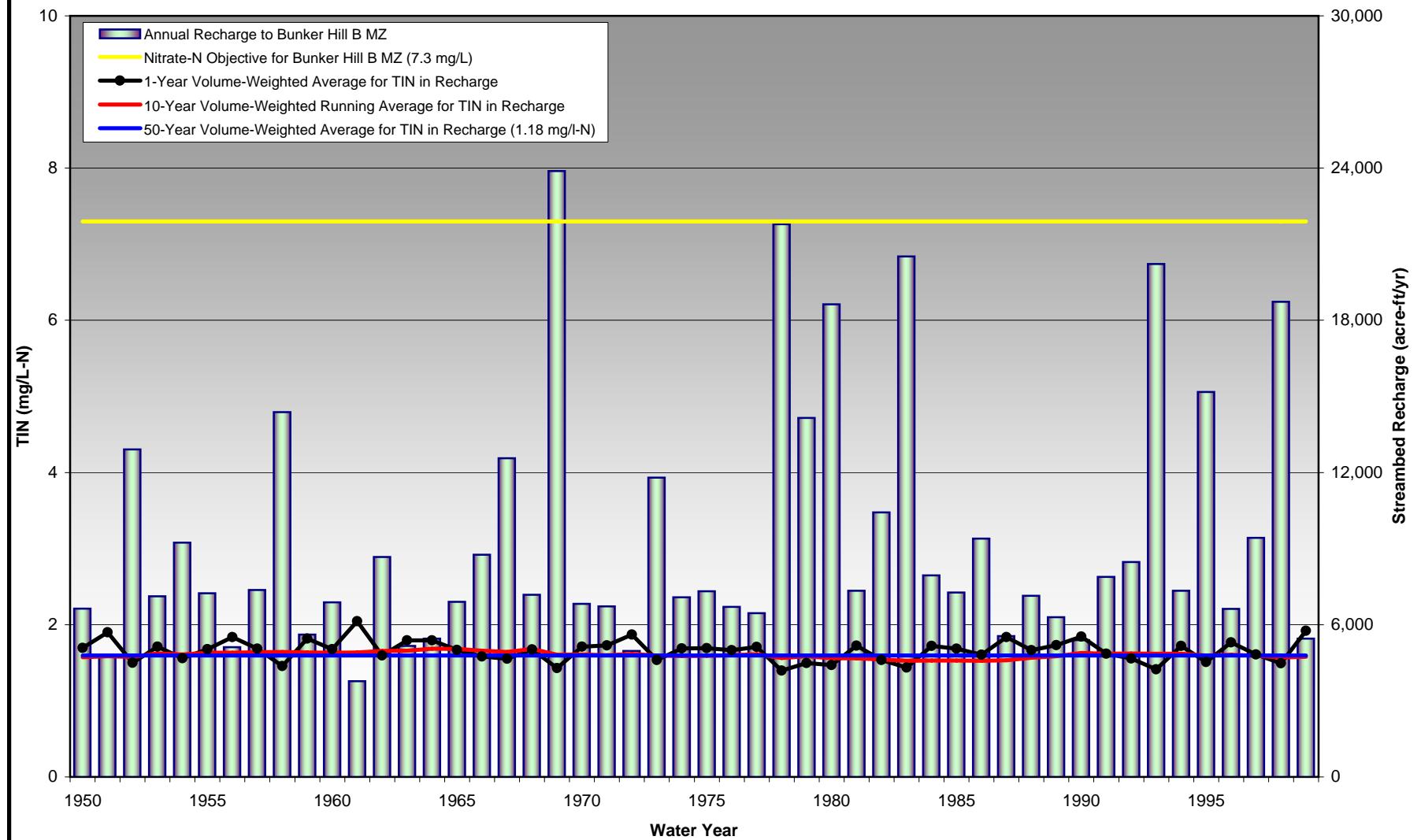


Table 7b-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 7b - Partial Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	411	392	402	3.36	3.20	3.28
1951	477	398	402	3.89	3.25	3.28
1952	357	394	402	2.92	3.21	3.28
1953	432	411	402	3.52	3.35	3.28
1954	384	405	402	3.14	3.30	3.28
1955	428	413	402	3.48	3.37	3.28
1956	449	412	402	3.67	3.36	3.28
1957	431	416	402	3.51	3.39	3.28
1958	340	414	402	2.77	3.38	3.28
1959	457	411	402	3.73	3.35	3.28
1960	428	413	402	3.48	3.37	3.28
1961	484	413	402	3.95	3.37	3.28
1962	395	418	402	3.22	3.41	3.28
1963	452	420	402	3.70	3.42	3.28
1964	446	426	402	3.64	3.47	3.28
1965	417	425	402	3.40	3.47	3.28
1966	382	418	402	3.12	3.41	3.28
1967	369	411	402	3.02	3.36	3.28
1968	424	422	402	3.46	3.44	3.28
1969	318	405	402	2.60	3.31	3.28
1970	445	406	402	3.64	3.32	3.28
1971	447	404	402	3.65	3.30	3.28
1972	458	409	402	3.74	3.34	3.28
1973	371	401	402	3.01	3.28	3.28
1974	421	399	402	3.44	3.26	3.28
1975	422	400	402	3.43	3.26	3.28
1976	405	402	402	3.31	3.28	3.28
1977	433	409	402	3.53	3.33	3.28
1978	294	391	402	2.40	3.19	3.28
1979	358	396	402	2.91	3.23	3.28
1980	321	383	402	2.63	3.12	3.28
1981	451	383	402	3.68	3.13	3.28
1982	389	378	402	3.17	3.08	3.28
1983	317	371	402	2.59	3.03	3.28
1984	448	373	402	3.65	3.04	3.28
1985	431	374	402	3.51	3.05	3.28
1986	423	375	402	3.45	3.06	3.28
1987	474	378	402	3.87	3.08	3.28
1988	432	395	402	3.52	3.22	3.28
1989	458	405	402	3.74	3.30	3.28
1990	467	422	402	3.81	3.44	3.28
1991	399	417	402	3.26	3.40	3.28
1992	393	417	402	3.21	3.40	3.28
1993	301	414	402	2.47	3.38	3.28
1994	446	414	402	3.64	3.38	3.28
1995	357	406	402	2.92	3.31	3.28
1996	456	409	402	3.72	3.34	3.28
1997	396	402	402	3.23	3.28	3.28
1998	353	394	402	2.87	3.21	3.28
1999	496	396	402	4.05	3.23	3.28
Maximum	496	426		4.05	3.47	

San Timoteo Reach 3 defined here is equivalent to San Timoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 7b-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7b - Partial Planned Reuse in 2010

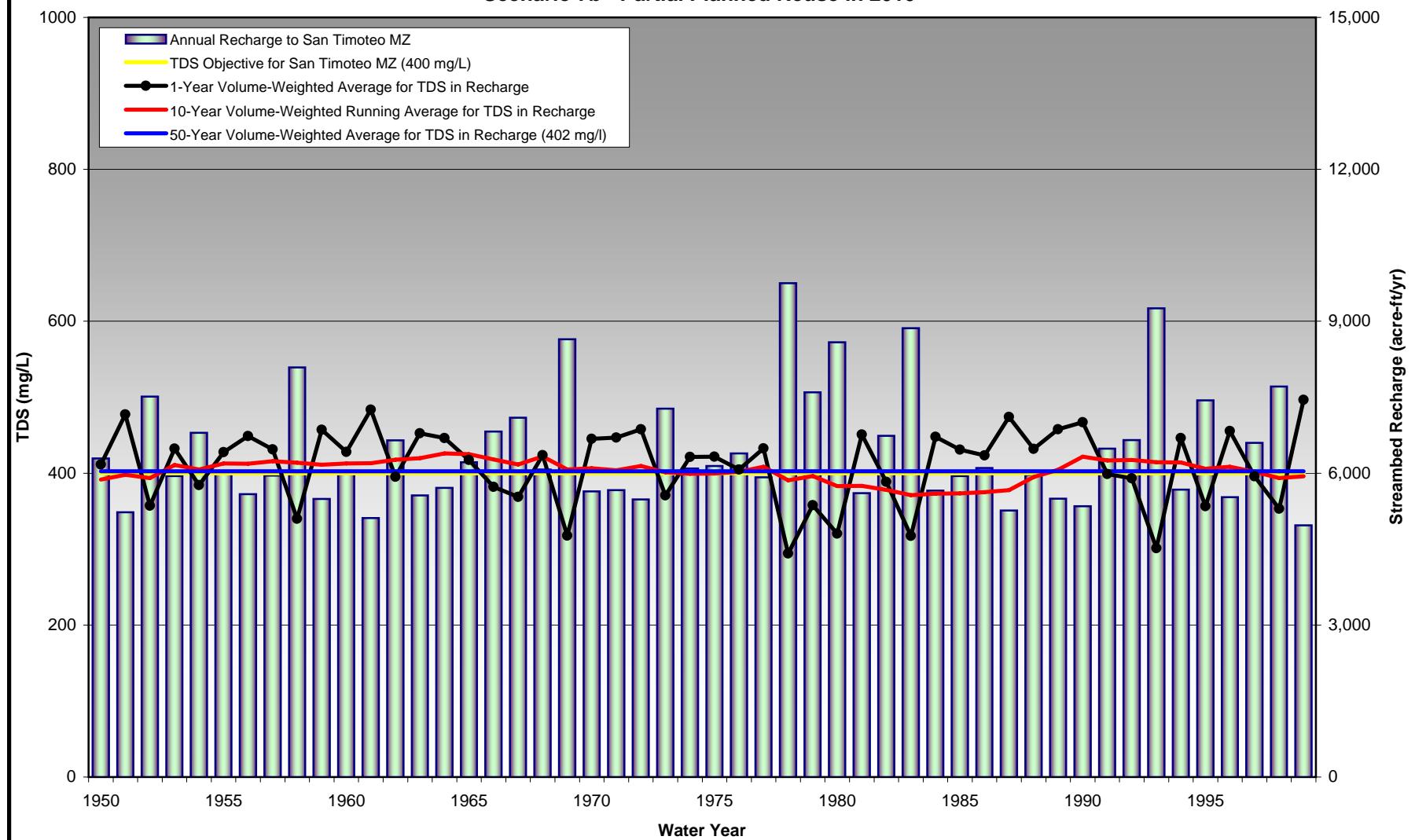


Figure 7b-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7b - Partial Planned Reuse in 2010

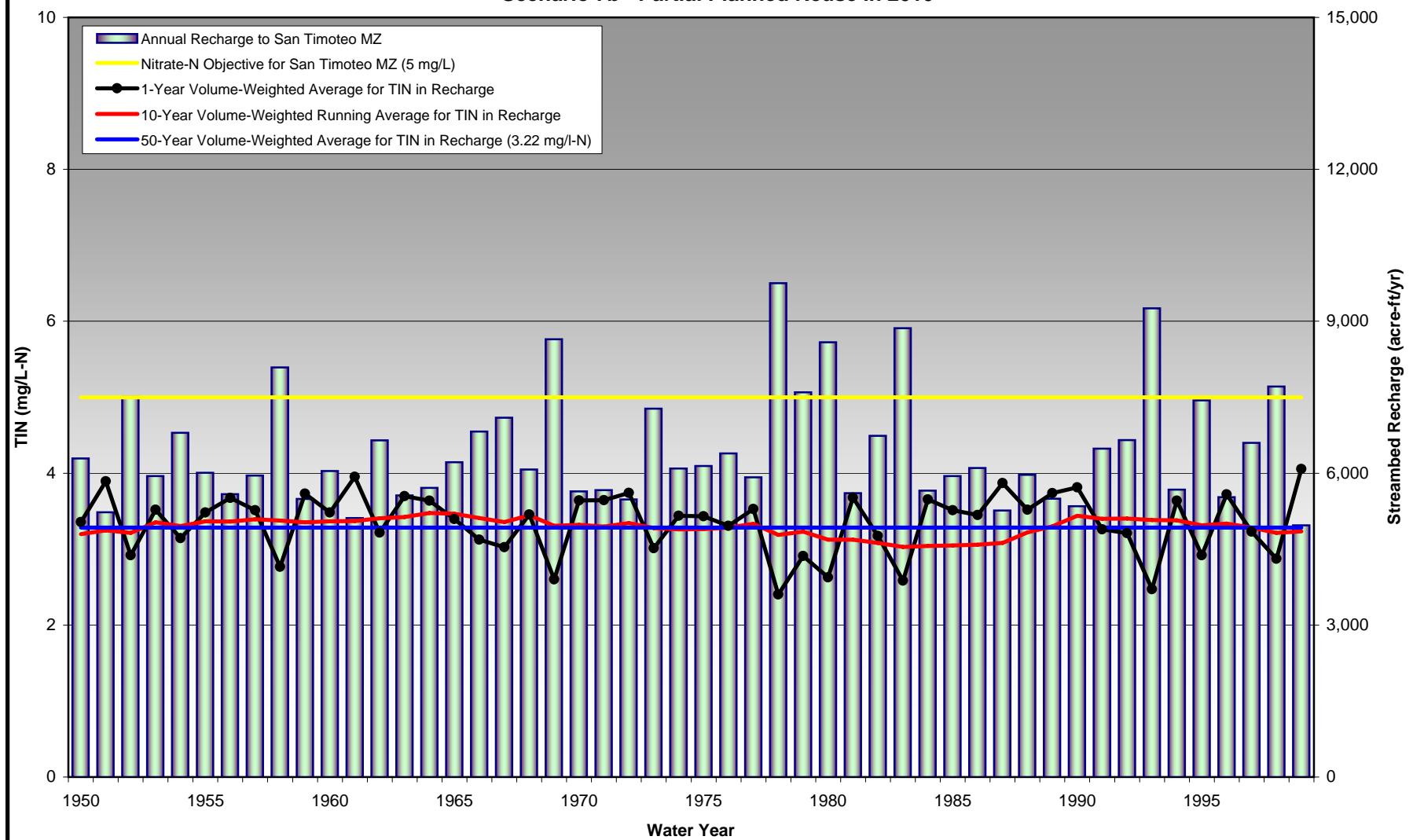


Table 7b-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 7b - Partial Planned Reuse in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	194	155	170	1.68	1.35	1.48
1951	344	161	170	3.01	1.40	1.48
1952	141	157	170	1.23	1.37	1.48
1953	264	176	170	2.29	1.53	1.48
1954	145	168	170	1.27	1.47	1.48
1955	230	183	170	2.00	1.59	1.48
1956	188	182	170	1.67	1.59	1.48
1957	223	187	170	1.93	1.63	1.48
1958	137	183	170	1.18	1.59	1.48
1959	270	181	170	2.36	1.58	1.48
1960	265	185	170	2.28	1.61	1.48
1961	367	185	170	3.25	1.61	1.48
1962	172	192	170	1.47	1.67	1.48
1963	242	191	170	2.11	1.66	1.48
1964	263	205	170	2.27	1.78	1.48
1965	193	201	170	1.66	1.75	1.48
1966	145	193	170	1.28	1.68	1.48
1967	131	179	170	1.16	1.56	1.48
1968	199	192	170	1.72	1.67	1.48
1969	115	168	170	1.01	1.47	1.48
1970	192	165	170	1.70	1.45	1.48
1971	225	164	170	1.96	1.43	1.48
1972	230	166	170	2.02	1.46	1.48
1973	180	164	170	1.53	1.43	1.48
1974	192	162	170	1.67	1.41	1.48
1975	215	163	170	1.84	1.42	1.48
1976	166	165	170	1.45	1.44	1.48
1977	233	175	170	2.03	1.53	1.48
1978	126	163	170	1.08	1.41	1.48
1979	155	174	170	1.32	1.50	1.48
1980	123	162	170	1.07	1.40	1.48
1981	286	163	170	2.50	1.41	1.48
1982	151	159	170	1.31	1.37	1.48
1983	128	152	170	1.10	1.31	1.48
1984	234	153	170	2.05	1.32	1.48
1985	216	153	170	1.88	1.32	1.48
1986	199	154	170	1.72	1.33	1.48
1987	328	155	170	2.88	1.34	1.48
1988	267	167	170	2.31	1.44	1.48
1989	293	174	170	2.56	1.51	1.48
1990	271	195	170	2.38	1.69	1.48
1991	153	185	170	1.34	1.60	1.48
1992	175	189	170	1.51	1.64	1.48
1993	114	181	170	1.00	1.58	1.48
1994	245	181	170	2.13	1.58	1.48
1995	121	167	170	1.07	1.46	1.48
1996	204	167	170	1.79	1.46	1.48
1997	165	162	170	1.43	1.42	1.48
1998	151	156	170	1.29	1.36	1.48
1999	388	157	170	3.43	1.37	1.48
Maximum	388	205		3.43	1.78	

Figure 7b-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7b - Partial Planned Reuse in 2010

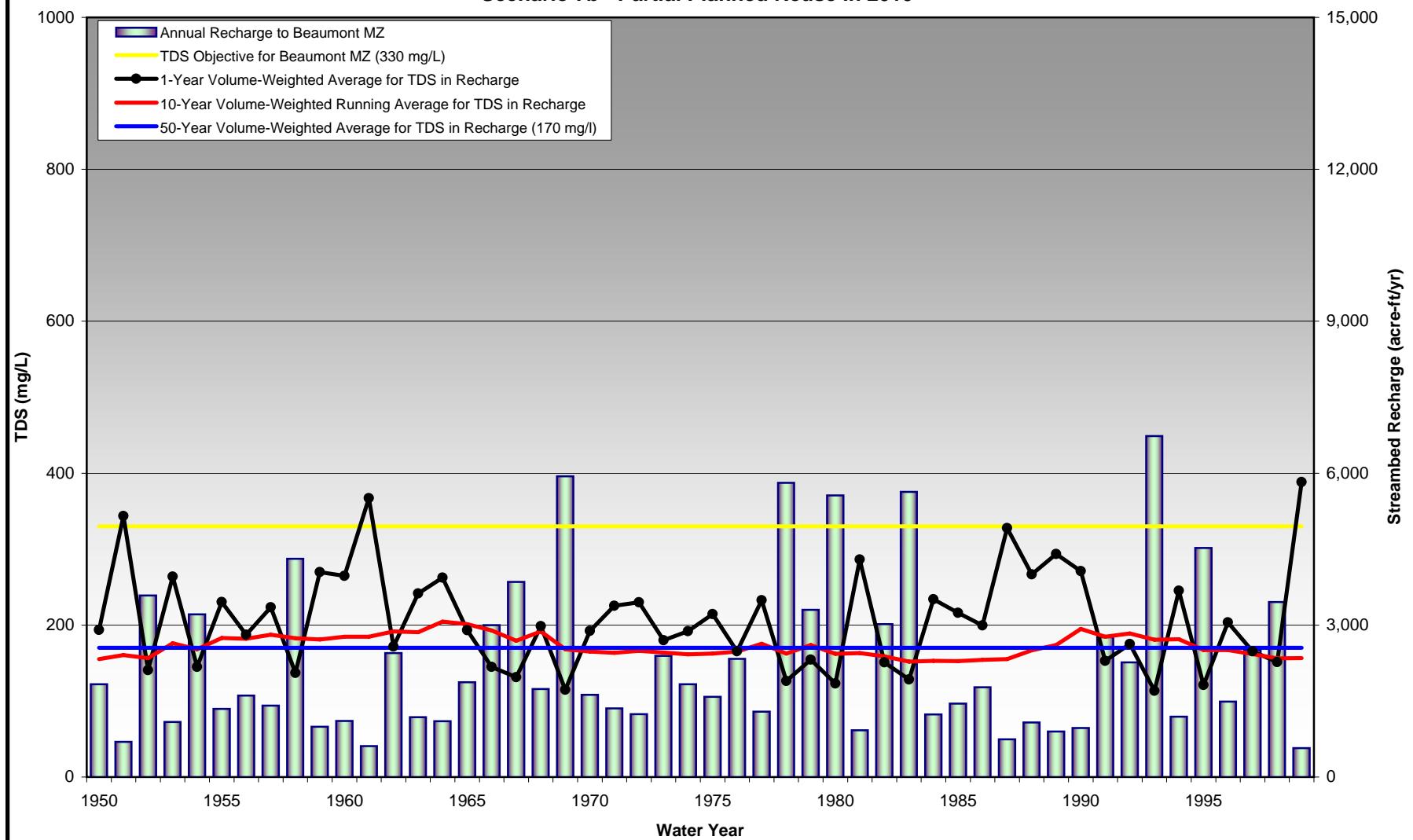


Figure 7b-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7b - Partial Planned Reuse in 2010

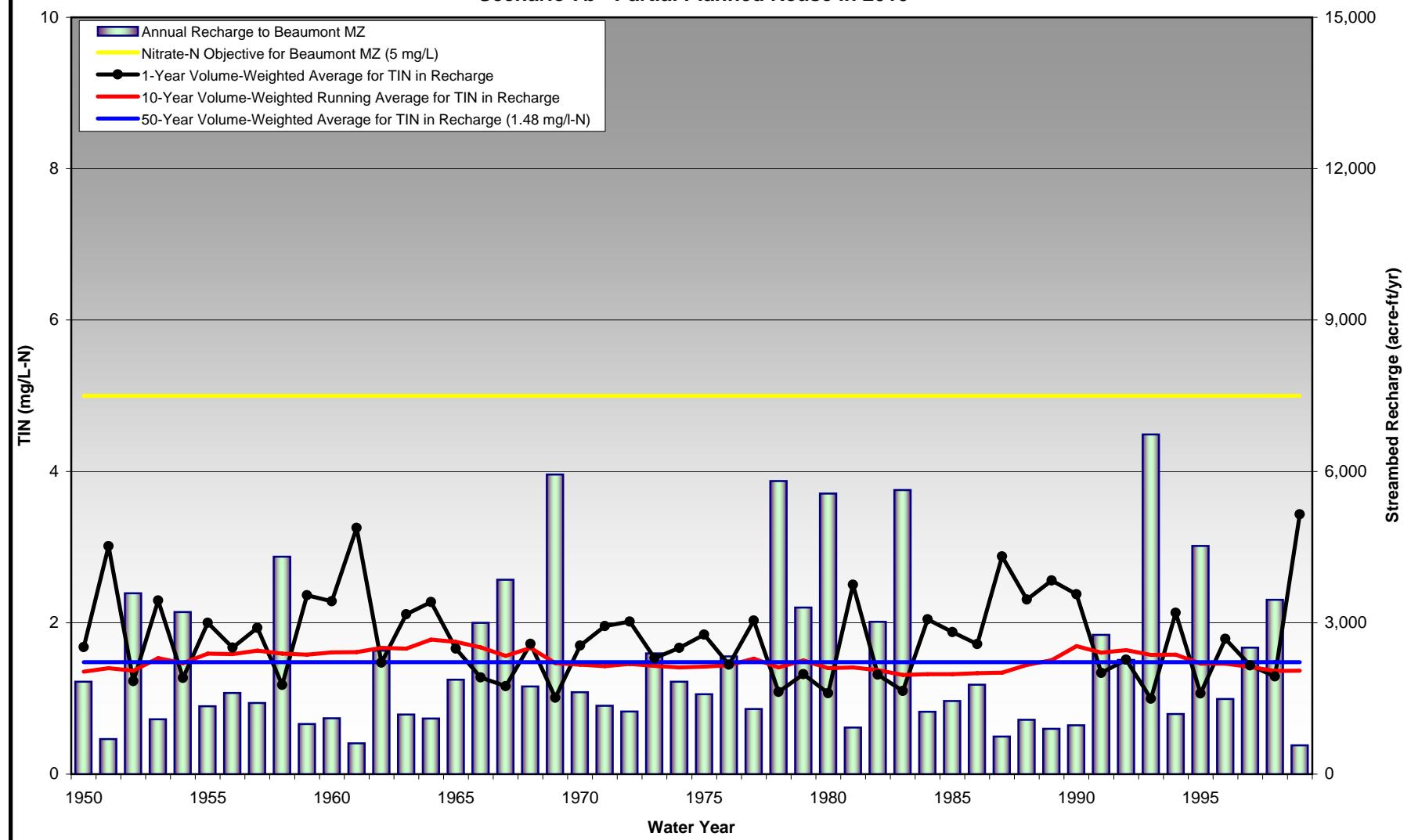


Table 7c-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 7c - Maximum Discharge in 2010

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only
1950	548	517	501	451	477	610	6.93	6.53	6.33	5.57	5.96	7.83
1951	598	531	513	460	477	610	7.59	6.71	6.47	5.69	5.96	7.83
1952	396	508	482	451	477	610	4.99	6.42	6.09	5.58	5.96	7.83
1953	575	545	527	489	477	610	7.28	6.90	6.67	6.14	5.96	7.83
1954	490	521	507	482	477	610	6.19	6.59	6.41	6.05	5.96	7.83
1955	556	523	508	505	477	609	7.03	6.61	6.42	6.38	5.96	7.82
1956	469	497	486	499	477	610	5.97	6.29	6.15	6.31	5.96	7.83
1957	562	530	526	503	477	610	7.11	6.72	6.66	6.36	5.96	7.83
1958	423	500	492	509	477	599	5.27	6.31	6.22	6.43	5.96	7.68
1959	594	521	509	508	477	610	7.55	6.59	6.44	6.42	5.96	7.83
1960	573	524	512	510	477	610	7.25	6.63	6.47	6.45	5.96	7.83
1961	611	552	539	511	477	603	7.77	6.99	6.81	6.46	5.96	7.74
1962	496	539	526	526	477	610	6.27	6.82	6.64	6.65	5.96	7.83
1963	536	562	558	522	477	610	6.79	7.13	7.07	6.61	5.96	7.83
1964	572	558	554	531	477	610	7.26	7.07	7.02	6.72	5.96	7.83
1965	540	551	548	529	477	605	6.82	6.98	6.94	6.70	5.96	7.77
1966	434	516	510	524	477	610	5.44	6.51	6.44	6.62	5.96	7.83
1967	396	496	483	503	477	605	4.95	6.25	6.08	6.35	5.96	7.76
1968	523	493	481	516	477	610	6.64	6.22	6.06	6.52	5.96	7.83
1969	285	435	403	463	477	603	3.44	5.46	5.02	5.82	5.96	7.72
1970	547	437	403	461	477	610	6.93	5.48	5.03	5.80	5.96	7.83
1971	556	461	419	458	477	610	7.04	5.80	5.23	5.76	5.96	7.83
1972	549	492	444	462	477	601	6.97	6.20	5.56	5.81	5.96	7.71
1973	486	485	439	458	477	610	6.10	6.09	5.48	5.75	5.96	7.83
1974	512	530	528	454	477	610	6.48	6.70	6.68	5.70	5.96	7.83
1975	554	531	529	455	477	610	7.01	6.72	6.69	5.72	5.96	7.84
1976	554	531	529	466	477	610	7.00	6.71	6.69	5.85	5.96	7.84
1977	552	531	529	482	477	428	6.99	6.72	6.69	6.06	5.96	5.39
1978	331	501	472	454	477	610	4.06	6.31	5.92	5.69	5.96	7.84
1979	466	491	463	493	477	610	5.79	6.17	5.80	6.20	5.96	7.83
1980	340	448	414	461	477	609	3.69	5.50	5.00	5.69	5.96	7.82
1981	576	453	416	462	477	611	7.30	5.56	5.02	5.70	5.96	7.84
1982	456	434	405	455	477	610	5.74	5.31	4.89	5.61	5.96	7.83
1983	381	444	419	443	477	500	4.49	5.40	5.02	5.42	5.96	6.33
1984	548	460	429	445	477	609	6.94	5.63	5.15	5.45	5.96	7.82
1985	540	500	482	444	477	610	6.83	6.26	6.00	5.44	5.96	7.84
1986	505	486	472	441	477	610	6.36	6.07	5.86	5.40	5.96	7.83
1987	588	512	494	443	477	610	7.47	6.42	6.14	5.42	5.96	7.83
1988	538	544	542	469	477	610	6.80	6.88	6.86	5.76	5.96	7.83
1989	574	549	547	477	477	610	7.27	6.95	6.92	5.87	5.96	7.84
1990	578	557	554	515	477	610	7.34	7.05	7.02	6.46	5.96	7.84
1991	463	548	543	504	477	610	5.84	6.94	6.87	6.32	5.96	7.83
1992	478	526	521	507	477	611	6.02	6.66	6.58	6.35	5.96	7.84
1993	317	482	444	486	477	610	3.57	6.01	5.45	6.06	5.96	7.83
1994	572	482	444	488	477	611	7.25	6.00	5.45	6.08	5.96	7.84
1995	381	442	413	469	477	610	4.55	5.44	5.01	5.80	5.96	7.83
1996	526	455	421	470	477	611	6.67	5.61	5.11	5.83	5.96	7.84
1997	514	462	425	466	477	610	6.47	5.70	5.16	5.76	5.96	7.83
1998	390	477	458	451	477	604	4.87	5.96	5.70	5.57	5.96	7.75
1999	607	483	461	452	477	610	7.71	6.05	5.75	5.59	5.96	7.84
Maximum	611	562	558	531	477	611	7.77	7.13	7.07	6.72	5.96	7.84

Figure 7c-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7c - Maximum Discharge in 2010

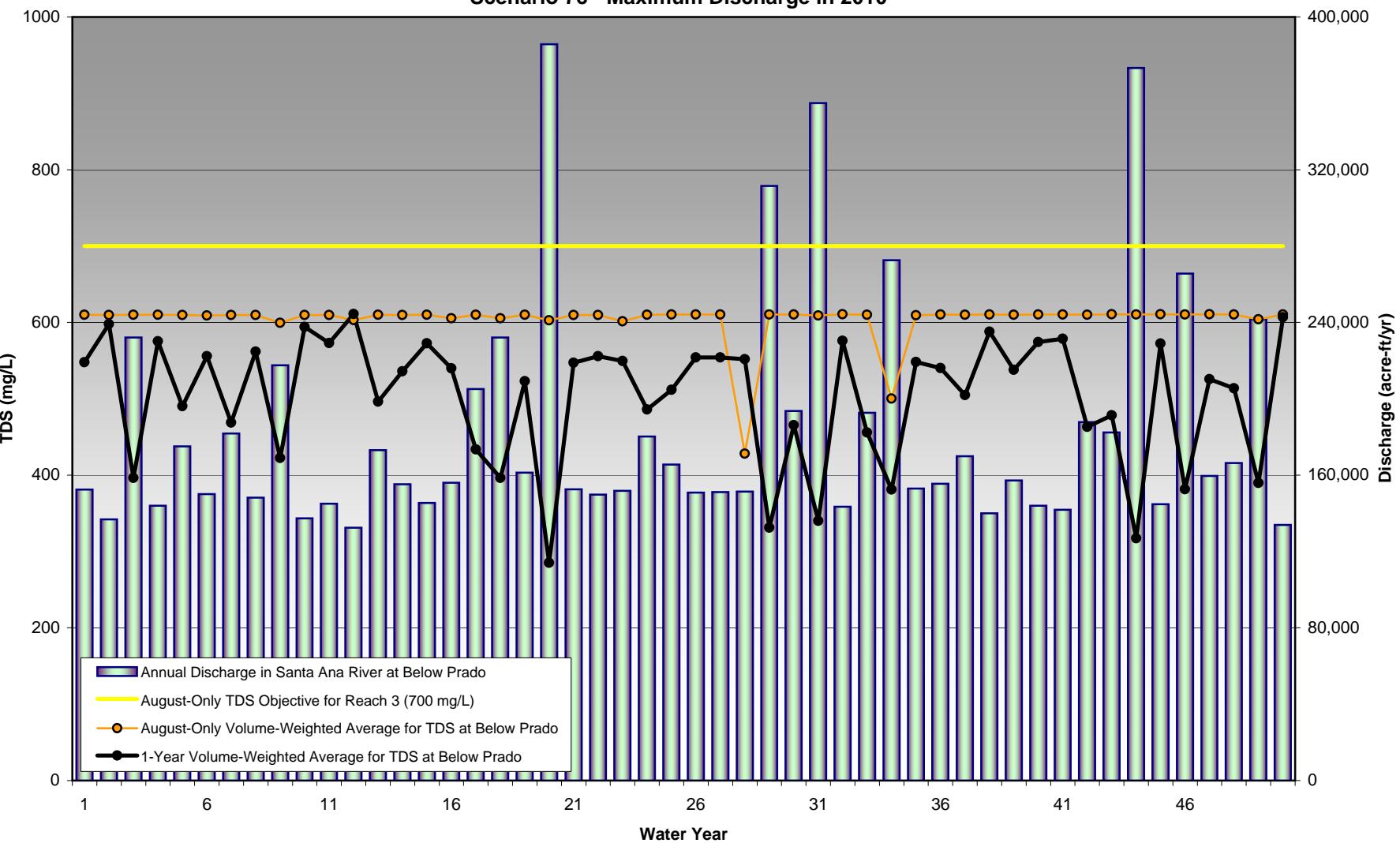


Figure 7c-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7c - Maximum Discharge in 2010

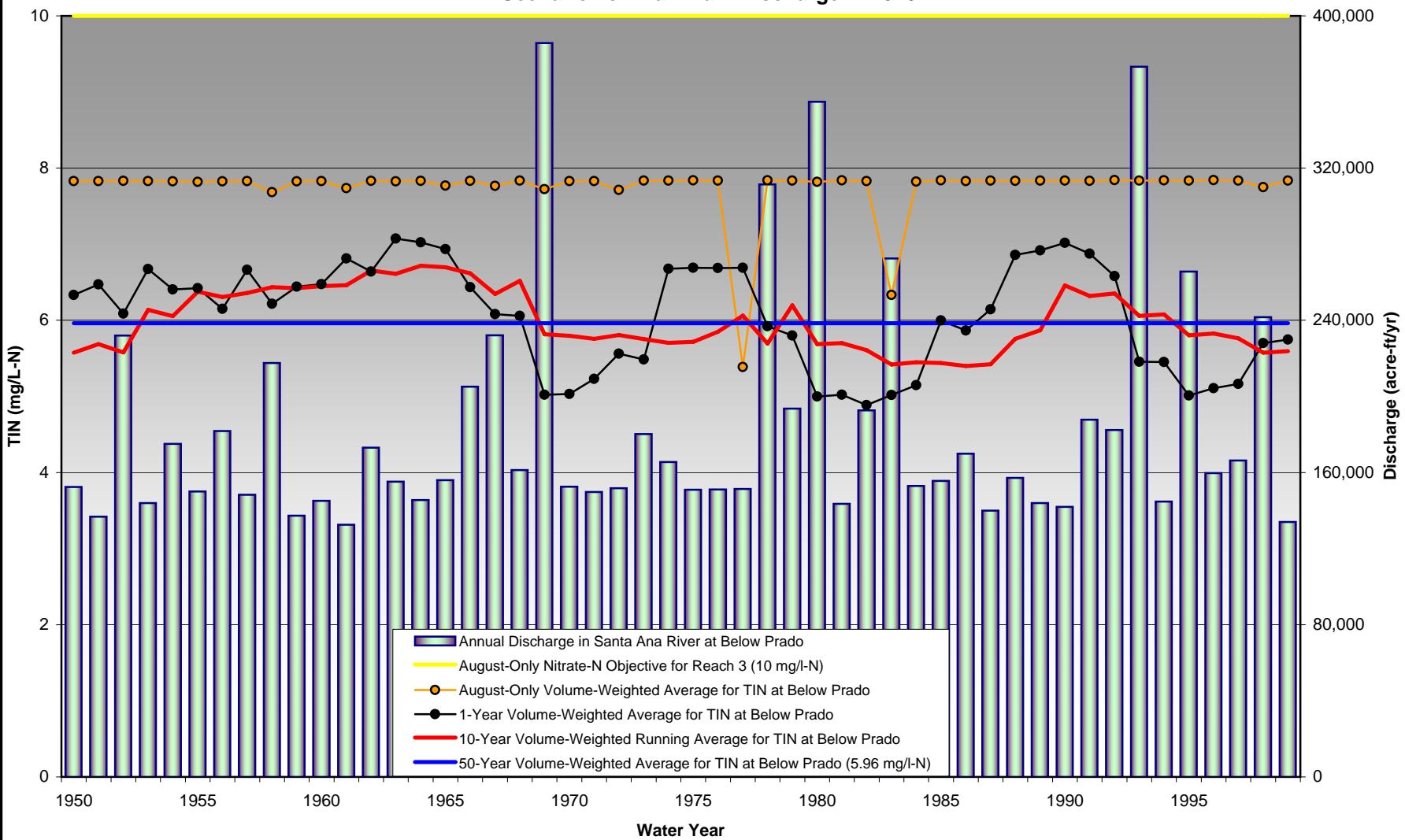


Figure 7c-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 7c - Maximum Discharge in 2010

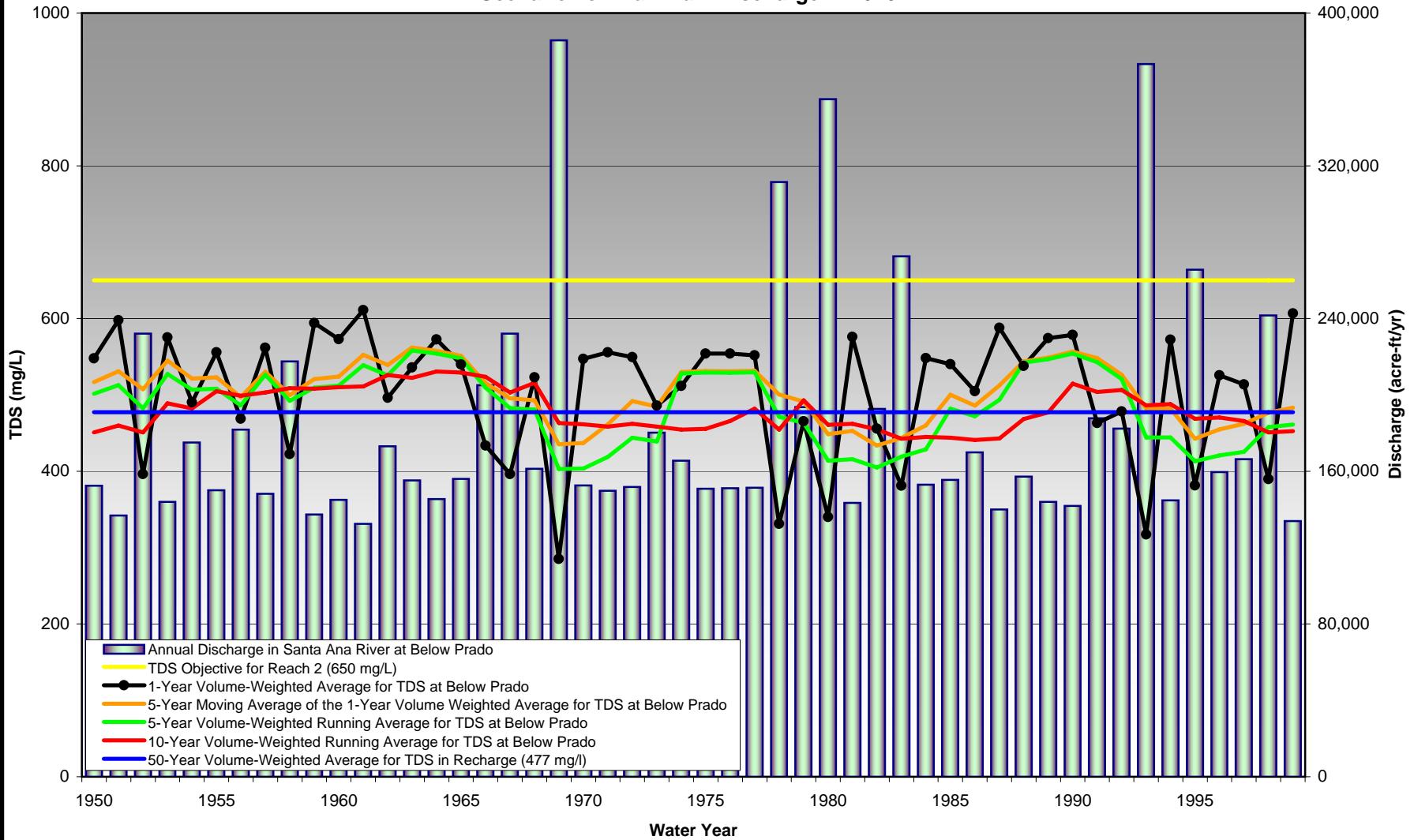


Table 7c-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 7c - Maximum Discharge in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	595	551	568	4.25	3.90	4.04
1951	614	556	568	4.39	3.93	4.04
1952	525	552	568	3.72	3.90	4.04
1953	605	571	568	4.33	4.06	4.04
1954	569	568	568	4.05	4.04	4.04
1955	595	578	568	4.25	4.12	4.04
1956	584	577	568	4.17	4.11	4.04
1957	602	579	568	4.31	4.13	4.04
1958	529	582	568	3.74	4.15	4.04
1959	617	582	568	4.42	4.15	4.04
1960	609	583	568	4.35	4.16	4.04
1961	622	584	568	4.45	4.17	4.04
1962	574	589	568	4.09	4.21	4.04
1963	592	588	568	4.23	4.20	4.04
1964	607	592	568	4.34	4.23	4.04
1965	592	592	568	4.22	4.22	4.04
1966	548	588	568	3.89	4.19	4.04
1967	529	580	568	3.75	4.13	4.04
1968	591	587	568	4.22	4.19	4.04
1969	451	567	568	3.12	4.03	4.04
1970	598	566	568	4.28	4.02	4.04
1971	599	564	568	4.28	4.01	4.04
1972	602	566	568	4.30	4.03	4.04
1973	572	565	568	4.07	4.01	4.04
1974	583	562	568	4.16	4.00	4.04
1975	602	563	568	4.30	4.00	4.04
1976	592	568	568	4.23	4.04	4.04
1977	604	575	568	4.32	4.09	4.04
1978	468	561	568	3.25	3.98	4.04
1979	554	574	568	3.91	4.09	4.04
1980	469	559	568	3.17	3.96	4.04
1981	611	560	568	4.37	3.96	4.04
1982	552	556	568	3.93	3.93	4.04
1983	496	548	568	3.41	3.86	4.04
1984	595	549	568	4.25	3.87	4.04
1985	593	548	568	4.24	3.86	4.04
1986	583	547	568	4.16	3.85	4.04
1987	615	548	568	4.40	3.86	4.04
1988	598	562	568	4.27	3.97	4.04
1989	608	567	568	4.35	4.01	4.04
1990	605	584	568	4.33	4.15	4.04
1991	565	579	568	4.02	4.12	4.04
1992	564	580	568	4.01	4.13	4.04
1993	441	572	568	2.99	4.06	4.04
1994	603	572	568	4.31	4.06	4.04
1995	503	563	568	3.48	3.98	4.04
1996	597	564	568	4.27	3.99	4.04
1997	576	560	568	4.10	3.97	4.04
1998	509	551	568	3.59	3.90	4.04
1999	618	552	568	4.43	3.90	4.04
Maximum	622	592		4.45	4.23	

Figure 7c-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7c - Maximum Discharge in 2010

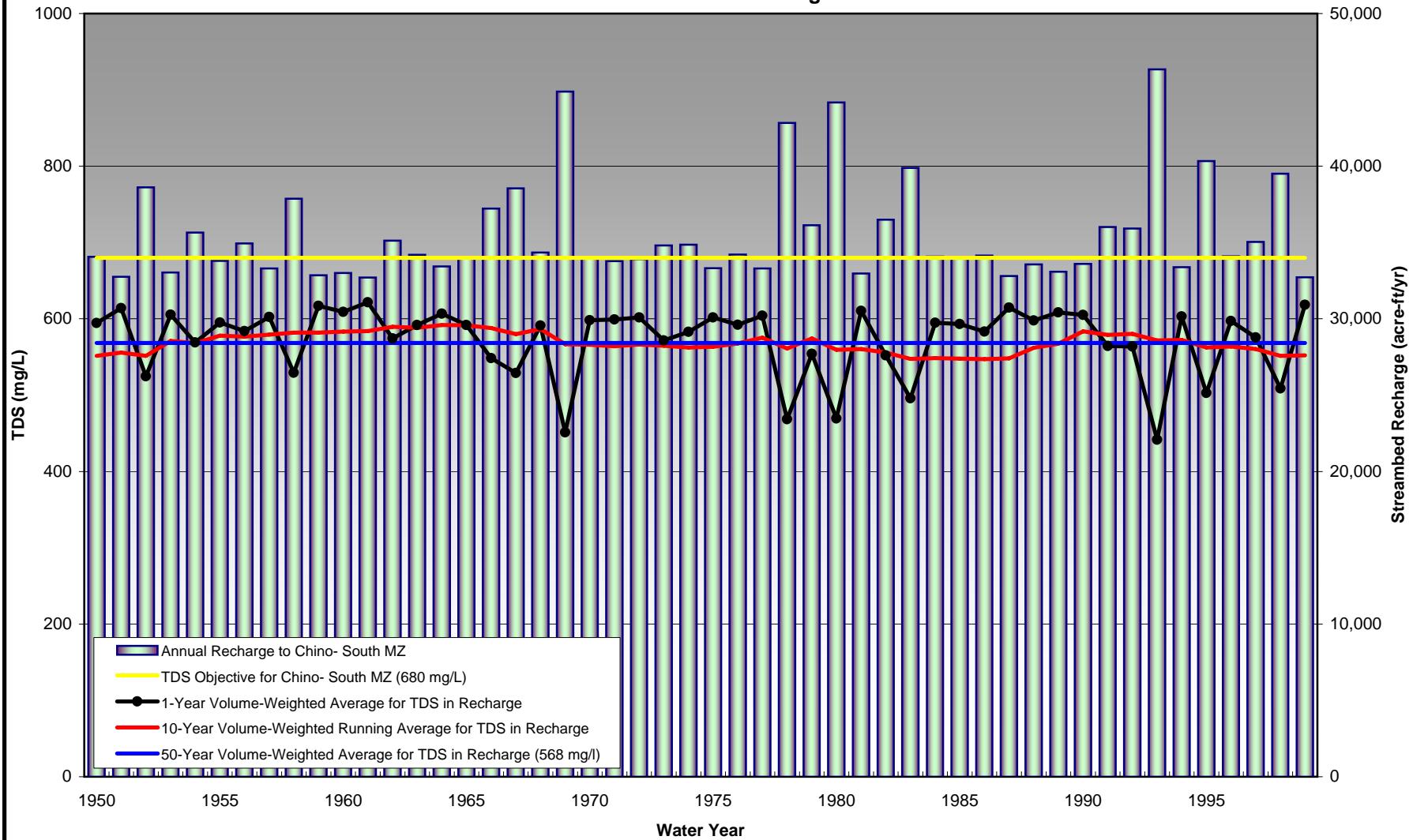


Figure 7c-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7c - Maximum Discharge in 2010

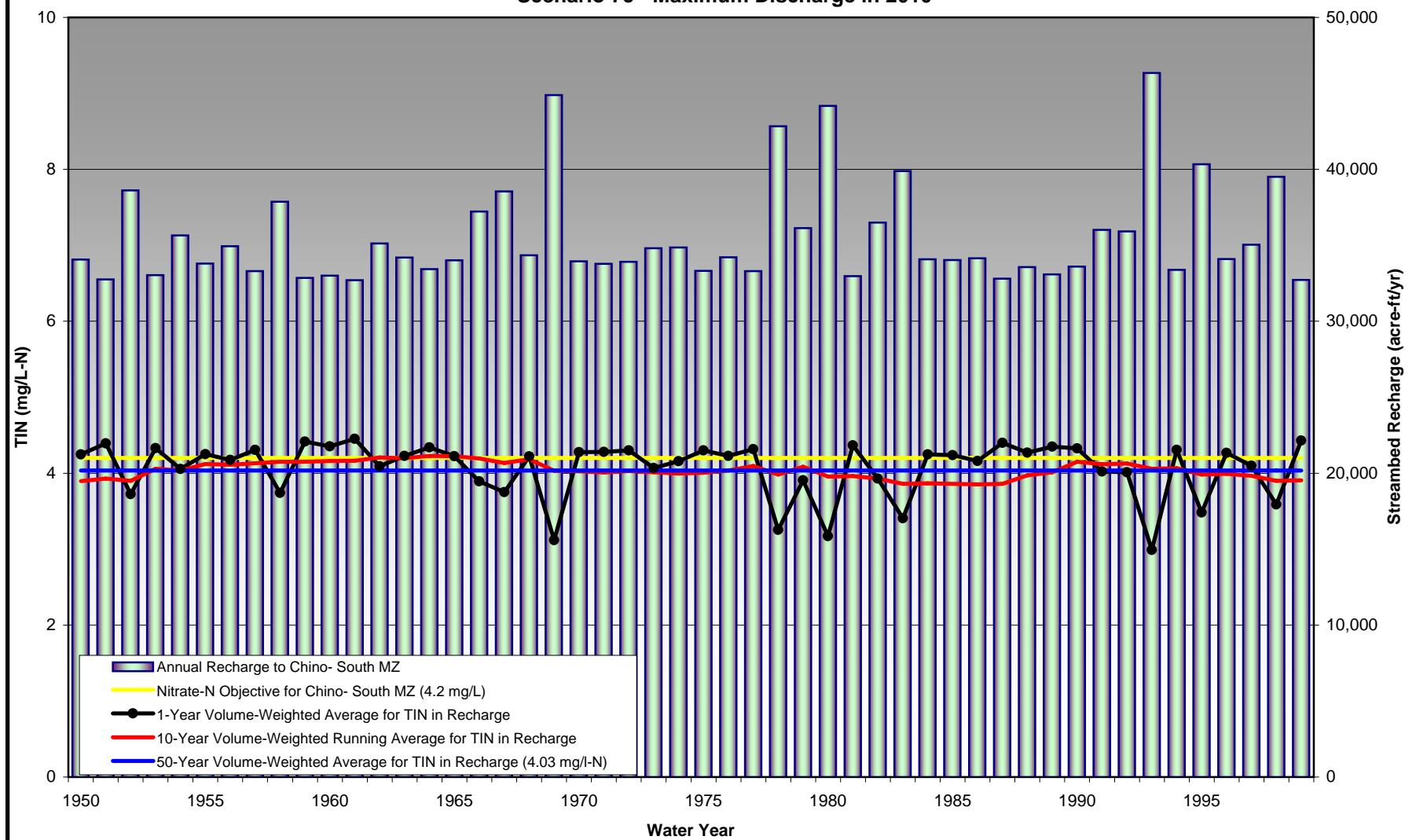


Table 7c-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 7c - Maximum Discharge in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	459	395	422	6.17	5.15	5.58
1951	519	402	422	7.09	5.25	5.58
1952	367	398	422	4.81	5.20	5.58
1953	495	429	422	6.71	5.69	5.58
1954	421	423	422	5.59	5.61	5.58
1955	472	439	422	6.37	5.85	5.58
1956	467	439	422	6.33	5.86	5.58
1957	491	445	422	6.64	5.96	5.58
1958	362	448	422	4.63	6.00	5.58
1959	508	446	422	6.92	5.98	5.58
1960	504	450	422	6.85	6.04	5.58
1961	528	451	422	7.23	6.05	5.58
1962	427	460	422	5.69	6.18	5.58
1963	476	458	422	6.44	6.15	5.58
1964	489	465	422	6.64	6.26	5.58
1965	453	463	422	6.07	6.23	5.58
1966	394	454	422	5.16	6.09	5.58
1967	372	441	422	4.84	5.89	5.58
1968	461	454	422	6.21	6.09	5.58
1969	291	421	422	3.46	5.56	5.58
1970	463	418	422	6.24	5.52	5.58
1971	463	414	422	6.22	5.46	5.58
1972	486	419	422	6.59	5.53	5.58
1973	425	415	422	5.61	5.46	5.58
1974	448	412	422	6.02	5.42	5.58
1975	487	414	422	6.58	5.46	5.58
1976	453	420	422	6.08	5.54	5.58
1977	488	431	422	6.61	5.72	5.58
1978	306	410	422	3.72	5.37	5.58
1979	411	431	422	5.42	5.72	5.58
1980	304	408	422	3.66	5.34	5.58
1981	505	410	422	6.86	5.38	5.58
1982	397	403	422	5.24	5.27	5.58
1983	326	391	422	4.09	5.09	5.58
1984	466	392	422	6.28	5.10	5.58
1985	474	392	422	6.40	5.09	5.58
1986	453	391	422	6.06	5.09	5.58
1987	516	393	422	7.04	5.11	5.58
1988	476	413	422	6.43	5.44	5.58
1989	486	419	422	6.57	5.53	5.58
1990	490	448	422	6.65	5.99	5.58
1991	415	439	422	5.51	5.86	5.58
1992	402	440	422	5.29	5.87	5.58
1993	282	426	422	3.32	5.63	5.58
1994	484	427	422	6.55	5.65	5.58
1995	346	413	422	4.38	5.43	5.58
1996	463	414	422	6.22	5.44	5.58
1997	421	407	422	5.55	5.34	5.58
1998	350	395	422	4.43	5.14	5.58
1999	525	397	422	7.18	5.18	5.58
Maximum	528	465		7.23	6.26	

Figure 7c-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7c - Maximum Discharge in 2010

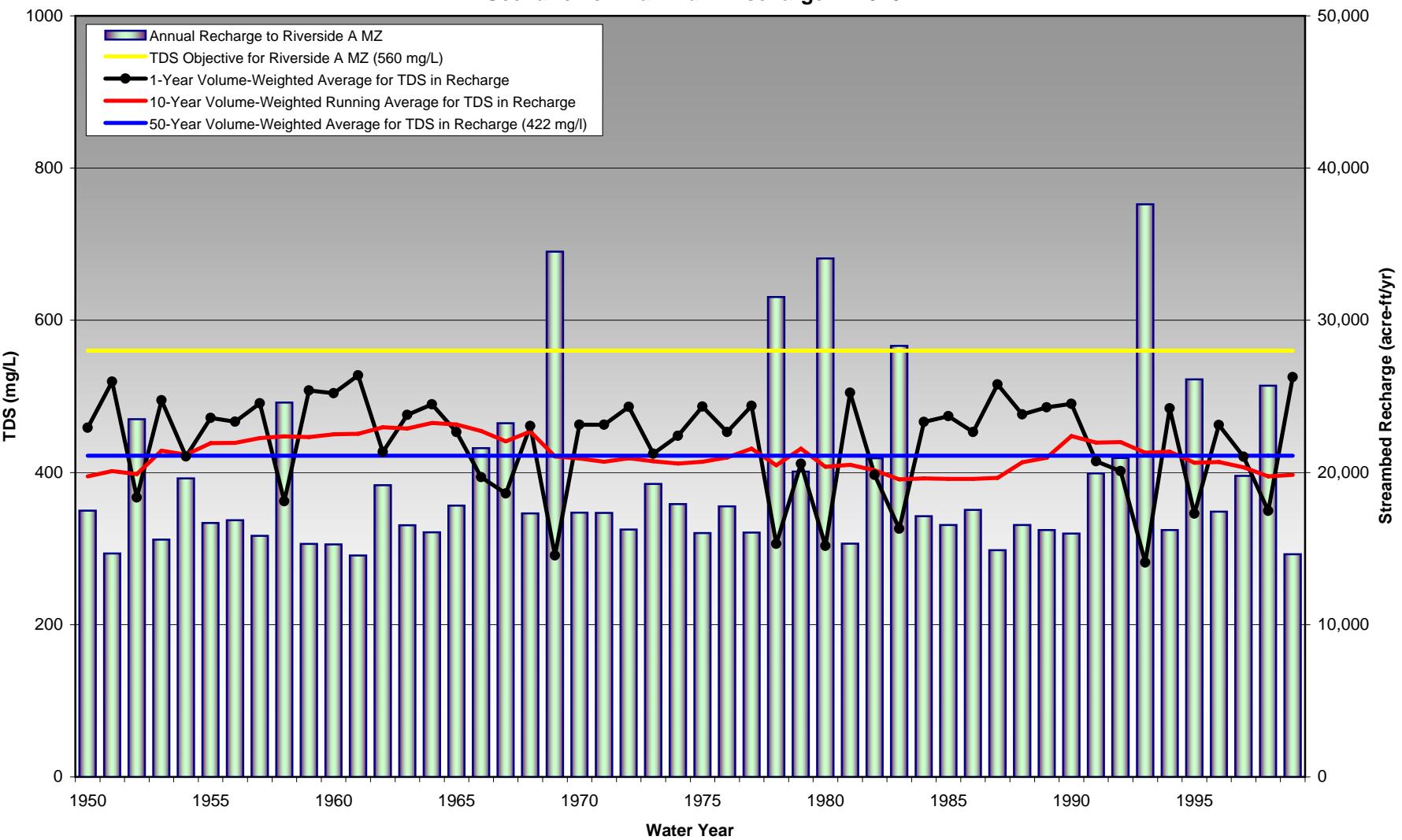


Figure 7c-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7c - Maximum Discharge in 2010

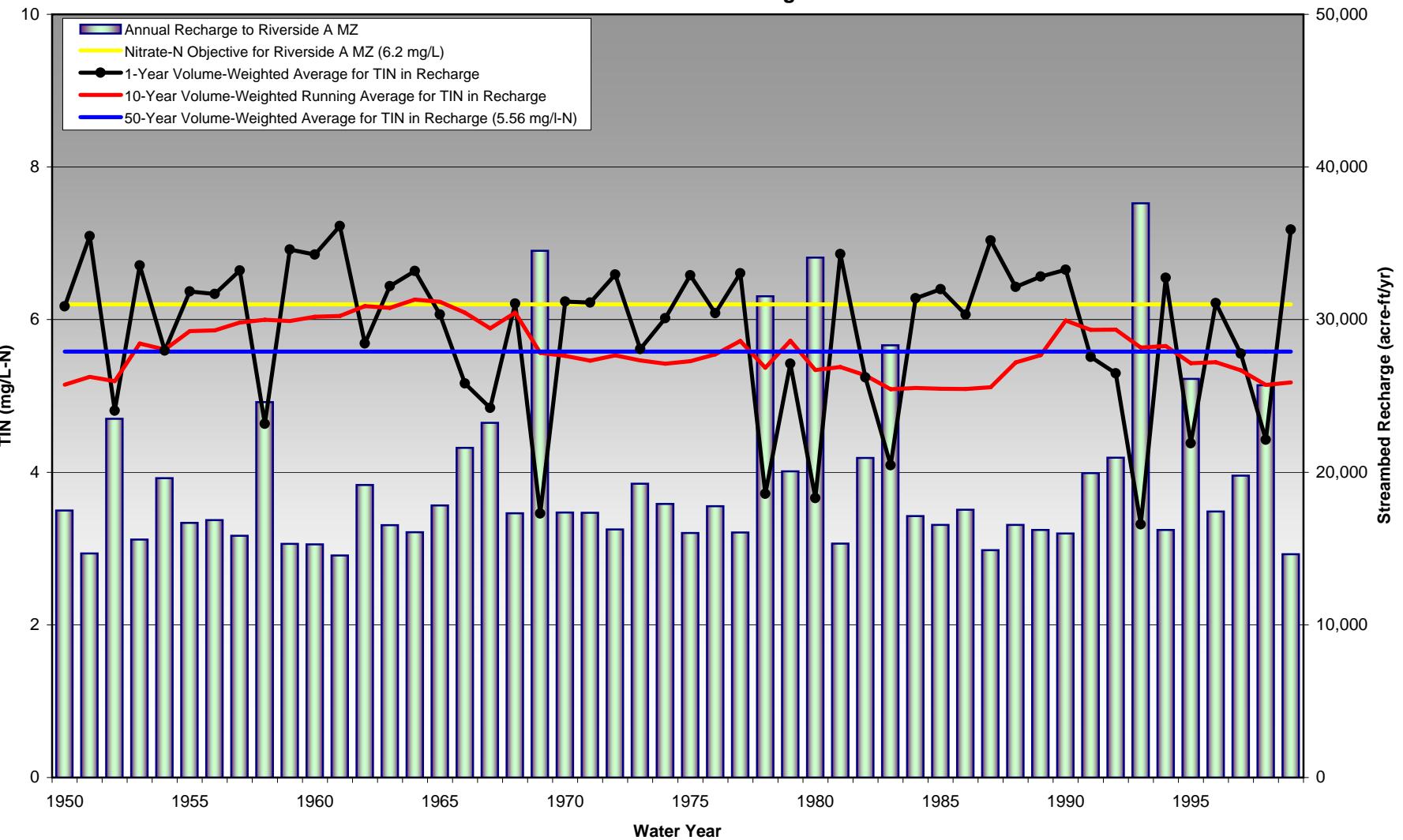


Table 7c-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 7c - Maximum Discharge in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	154	159	159	1.22	1.22	1.23
1951	188	160	159	1.41	1.22	1.23
1952	145	160	159	1.16	1.22	1.23
1953	174	161	159	1.33	1.24	1.23
1954	151	159	159	1.20	1.23	1.23
1955	160	160	159	1.27	1.24	1.23
1956	138	158	159	1.13	1.23	1.23
1957	172	159	159	1.32	1.24	1.23
1958	157	157	159	1.22	1.23	1.23
1959	188	157	159	1.41	1.23	1.23
1960	172	158	159	1.32	1.24	1.23
1961	192	157	159	1.46	1.23	1.23
1962	156	160	159	1.23	1.25	1.23
1963	150	159	159	1.20	1.24	1.23
1964	171	161	159	1.32	1.25	1.23
1965	160	161	159	1.24	1.25	1.23
1966	146	160	159	1.16	1.24	1.23
1967	150	157	159	1.17	1.22	1.23
1968	153	156	159	1.21	1.22	1.23
1969	164	158	159	1.23	1.22	1.23
1970	151	158	159	1.21	1.22	1.23
1971	158	157	159	1.25	1.21	1.23
1972	164	157	159	1.28	1.22	1.23
1973	163	158	159	1.26	1.22	1.23
1974	150	157	159	1.19	1.22	1.23
1975	176	158	159	1.33	1.22	1.23
1976	148	158	159	1.16	1.22	1.23
1977	163	160	159	1.26	1.23	1.23
1978	160	160	159	1.21	1.23	1.23
1979	160	159	159	1.23	1.23	1.23
1980	159	160	159	1.21	1.22	1.23
1981	183	160	159	1.37	1.23	1.23
1982	138	158	159	1.12	1.22	1.23
1983	159	158	159	1.23	1.22	1.23
1984	170	159	159	1.30	1.22	1.23
1985	160	158	159	1.23	1.22	1.23
1986	166	159	159	1.27	1.22	1.23
1987	186	160	159	1.40	1.23	1.23
1988	165	160	159	1.27	1.23	1.23
1989	174	160	159	1.33	1.24	1.23
1990	168	161	159	1.29	1.25	1.23
1991	145	158	159	1.17	1.23	1.23
1992	144	159	159	1.15	1.24	1.23
1993	159	159	159	1.19	1.22	1.23
1994	174	159	159	1.33	1.22	1.23
1995	157	159	159	1.20	1.21	1.23
1996	166	159	159	1.26	1.21	1.23
1997	159	158	159	1.23	1.21	1.23
1998	164	159	159	1.25	1.22	1.23
1999	200	159	159	1.48	1.22	1.23
Maximum	200	161		1.48	1.25	

Figure 7c-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7c - Maximum Discharge in 2010

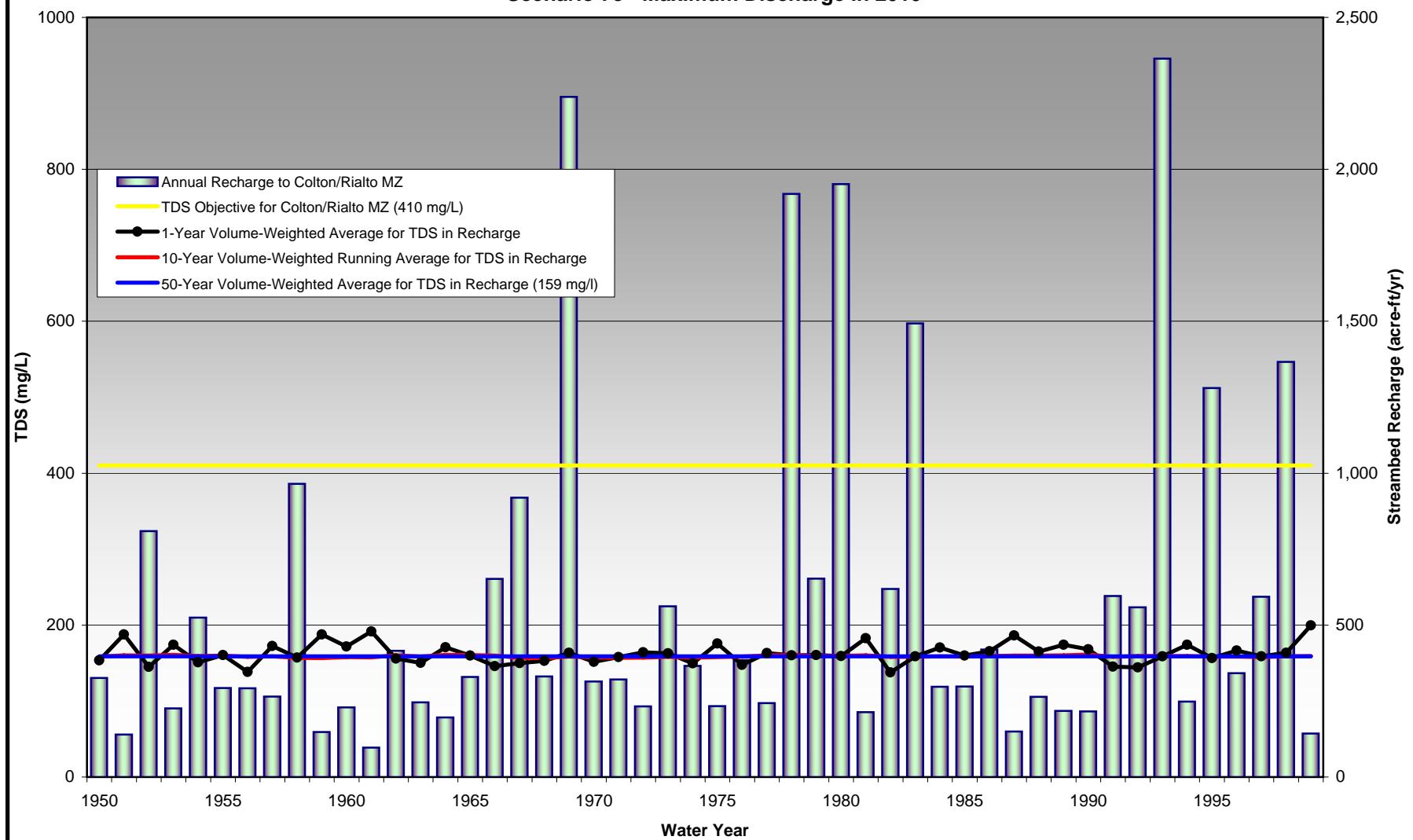


Figure 7c-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7c - Maximum Discharge in 2010

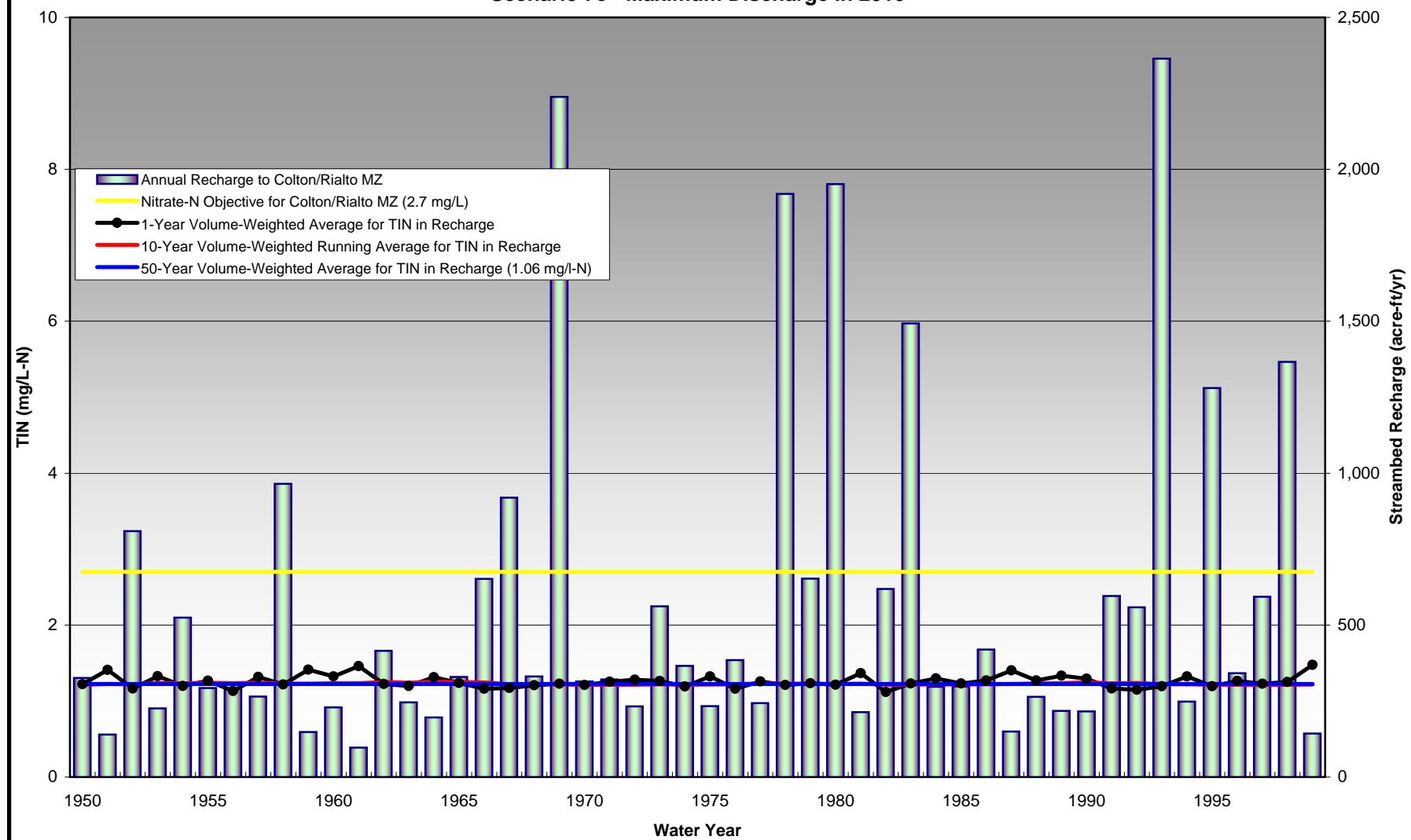


Table 7c-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 7c - Maximum Discharge in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	327	286	296	2.50	2.17	2.25
1951	368	290	296	2.82	2.19	2.25
1952	266	286	296	2.03	2.17	2.25
1953	325	299	296	2.48	2.27	2.25
1954	292	296	296	2.23	2.25	2.25
1955	320	303	296	2.45	2.31	2.25
1956	357	304	296	2.74	2.32	2.25
1957	320	306	296	2.44	2.34	2.25
1958	256	310	296	1.95	2.36	2.25
1959	351	309	296	2.68	2.36	2.25
1960	323	309	296	2.47	2.36	2.25
1961	395	310	296	3.03	2.37	2.25
1962	300	315	296	2.29	2.41	2.25
1963	353	317	296	2.71	2.43	2.25
1964	350	323	296	2.68	2.47	2.25
1965	322	323	296	2.46	2.47	2.25
1966	297	318	296	2.27	2.43	2.25
1967	274	311	296	2.08	2.38	2.25
1968	321	322	296	2.45	2.46	2.25
1969	234	300	296	1.73	2.28	2.25
1970	327	300	296	2.50	2.28	2.25
1971	330	297	296	2.52	2.26	2.25
1972	363	301	296	2.78	2.29	2.25
1973	275	295	296	2.10	2.24	2.25
1974	322	293	296	2.46	2.23	2.25
1975	322	294	296	2.45	2.23	2.25
1976	324	296	296	2.48	2.25	2.25
1977	331	301	296	2.53	2.29	2.25
1978	232	287	296	1.73	2.18	2.25
1979	262	295	296	1.99	2.24	2.25
1980	246	285	296	1.85	2.16	2.25
1981	325	285	296	2.47	2.16	2.25
1982	281	280	296	2.15	2.13	2.25
1983	238	274	296	1.80	2.08	2.25
1984	320	274	296	2.43	2.08	2.25
1985	321	274	296	2.45	2.08	2.25
1986	297	273	296	2.26	2.07	2.25
1987	354	273	296	2.70	2.07	2.25
1988	321	284	296	2.45	2.16	2.25
1989	335	291	296	2.56	2.21	2.25
1990	356	304	296	2.71	2.31	2.25
1991	307	302	296	2.35	2.30	2.25
1992	297	304	296	2.27	2.32	2.25
1993	236	304	296	1.77	2.31	2.25
1994	325	304	296	2.47	2.32	2.25
1995	261	296	296	1.96	2.25	2.25
1996	336	300	296	2.56	2.28	2.25
1997	297	296	296	2.26	2.25	2.25
1998	249	286	296	1.87	2.17	2.25
1999	362	288	296	2.76	2.18	2.25
Maximum	395	323		3.03	2.47	

Figure 7c-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7c - Maximum Discharge in 2010

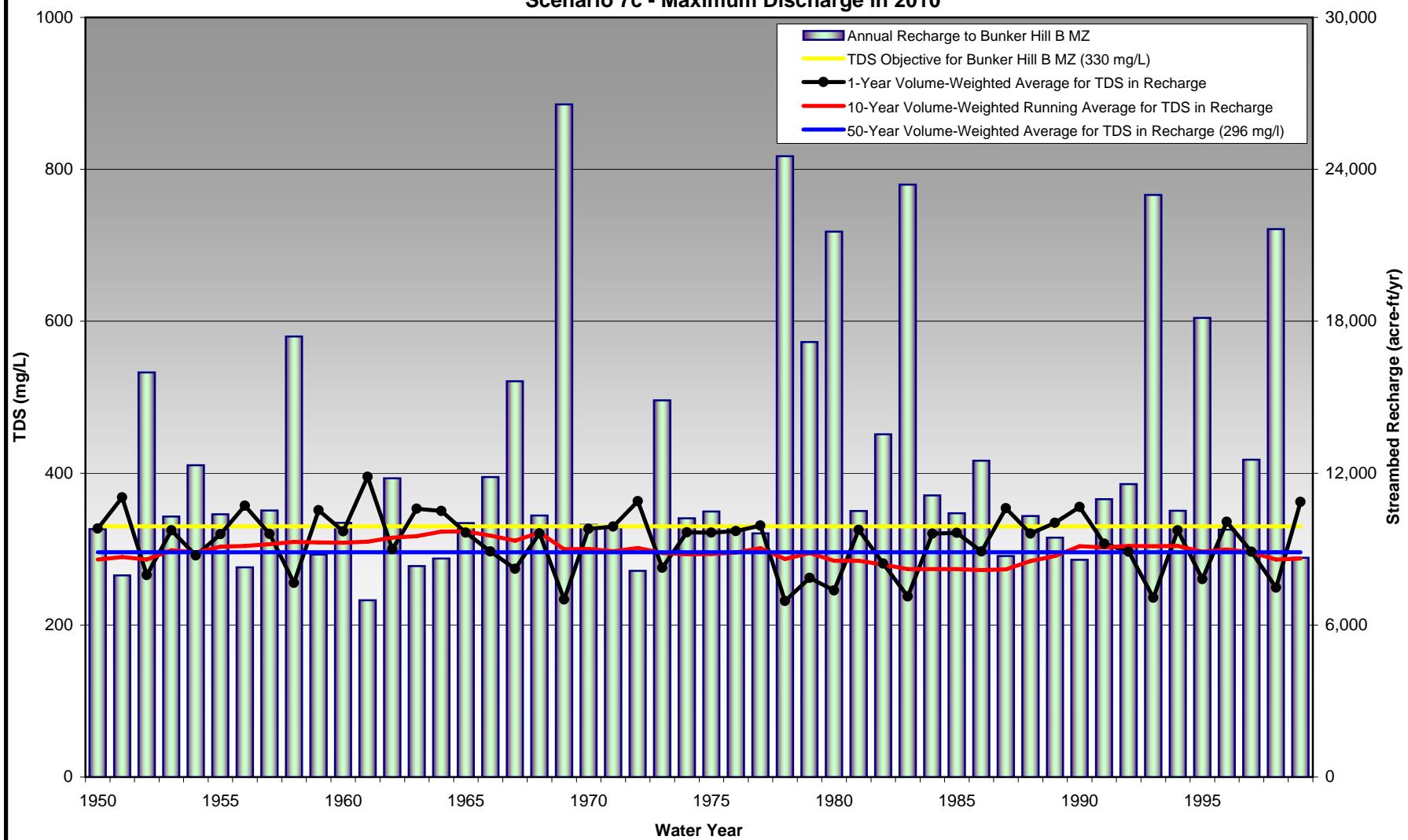


Figure 7c-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7c - Maximum Discharge in 2010

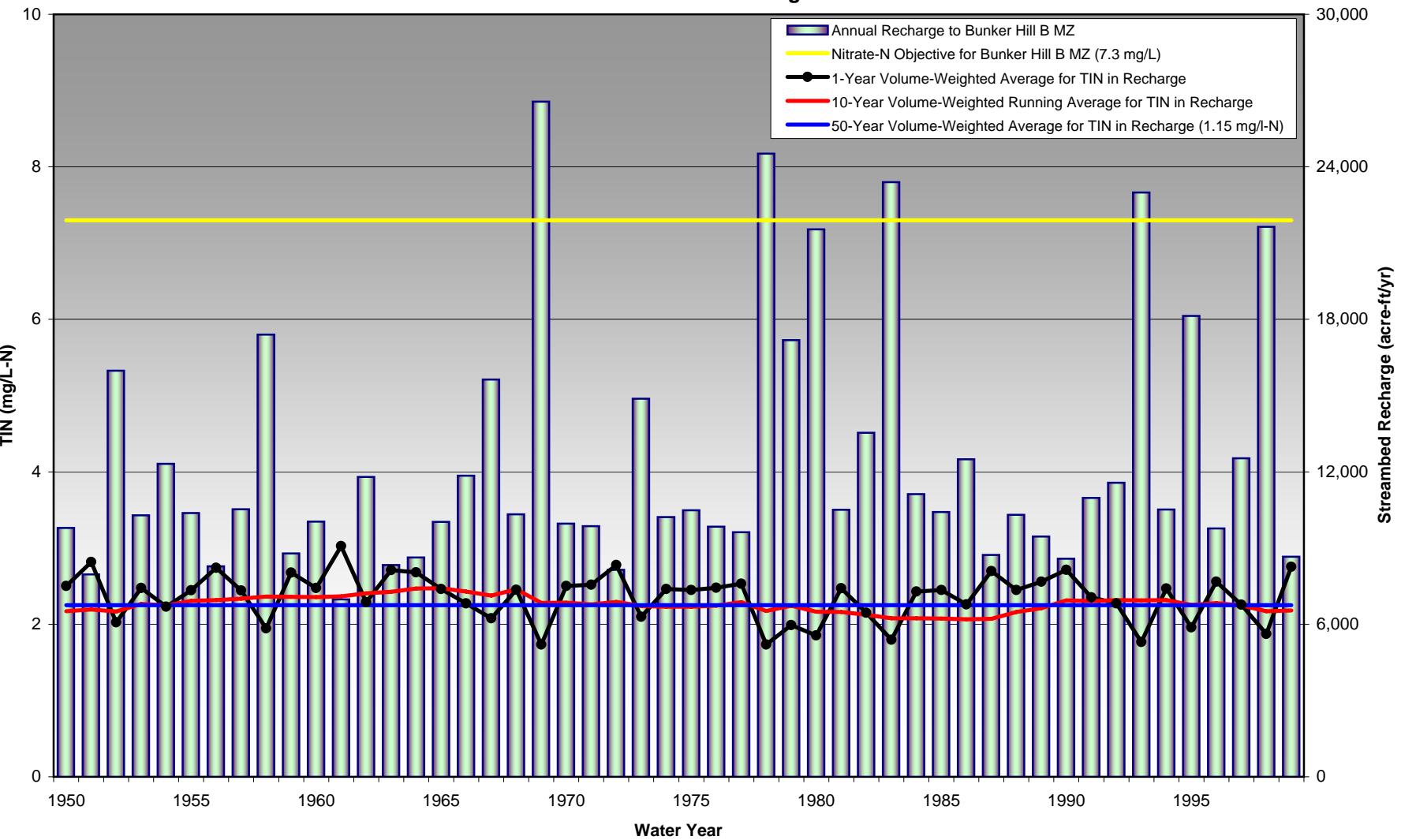


Table 7c-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 7c - Maximum Discharge in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	448	432	441	3.63	3.51	3.58
1951	498	437	441	4.03	3.55	3.58
1952	403	434	441	3.27	3.52	3.58
1953	465	448	441	3.76	3.63	3.58
1954	427	443	441	3.46	3.59	3.58
1955	461	450	441	3.74	3.64	3.58
1956	477	449	441	3.87	3.64	3.58
1957	464	452	441	3.75	3.66	3.58
1958	388	450	441	3.14	3.65	3.58
1959	483	448	441	3.92	3.63	3.58
1960	461	449	441	3.73	3.64	3.58
1961	502	450	441	4.07	3.64	3.58
1962	435	454	441	3.52	3.67	3.58
1963	479	455	441	3.89	3.69	3.58
1964	475	460	441	3.85	3.73	3.58
1965	453	459	441	3.66	3.72	3.58
1966	425	454	441	3.45	3.68	3.58
1967	413	448	441	3.36	3.63	3.58
1968	458	457	441	3.71	3.70	3.58
1969	368	443	441	2.99	3.59	3.58
1970	474	444	441	3.85	3.60	3.58
1971	475	442	441	3.85	3.59	3.58
1972	483	447	441	3.92	3.62	3.58
1973	415	440	441	3.35	3.57	3.58
1974	456	439	441	3.70	3.56	3.58
1975	456	439	441	3.69	3.56	3.58
1976	443	441	441	3.60	3.58	3.58
1977	465	446	441	3.77	3.62	3.58
1978	345	432	441	2.80	3.50	3.58
1979	403	436	441	3.27	3.54	3.58
1980	370	425	441	3.01	3.45	3.58
1981	478	425	441	3.88	3.45	3.58
1982	430	421	441	3.49	3.41	3.58
1983	367	415	441	2.97	3.37	3.58
1984	476	417	441	3.86	3.38	3.58
1985	463	417	441	3.75	3.38	3.58
1986	458	418	441	3.70	3.39	3.58
1987	495	421	441	4.01	3.41	3.58
1988	464	435	441	3.76	3.52	3.58
1989	483	443	441	3.92	3.59	3.58
1990	490	456	441	3.97	3.70	3.58
1991	438	452	441	3.56	3.67	3.58
1992	434	453	441	3.52	3.67	3.58
1993	352	451	441	2.87	3.65	3.58
1994	475	450	441	3.85	3.65	3.58
1995	403	444	441	3.27	3.60	3.58
1996	482	446	441	3.91	3.62	3.58
1997	436	441	441	3.53	3.58	3.58
1998	400	434	441	3.23	3.52	3.58
1999	511	436	441	4.14	3.54	3.58
Maximum	511	460		4.14	3.73	

San Timoteo Reach 3 defined here is equivalent to San Timoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 7c-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7c - Maximum Discharge in 2010

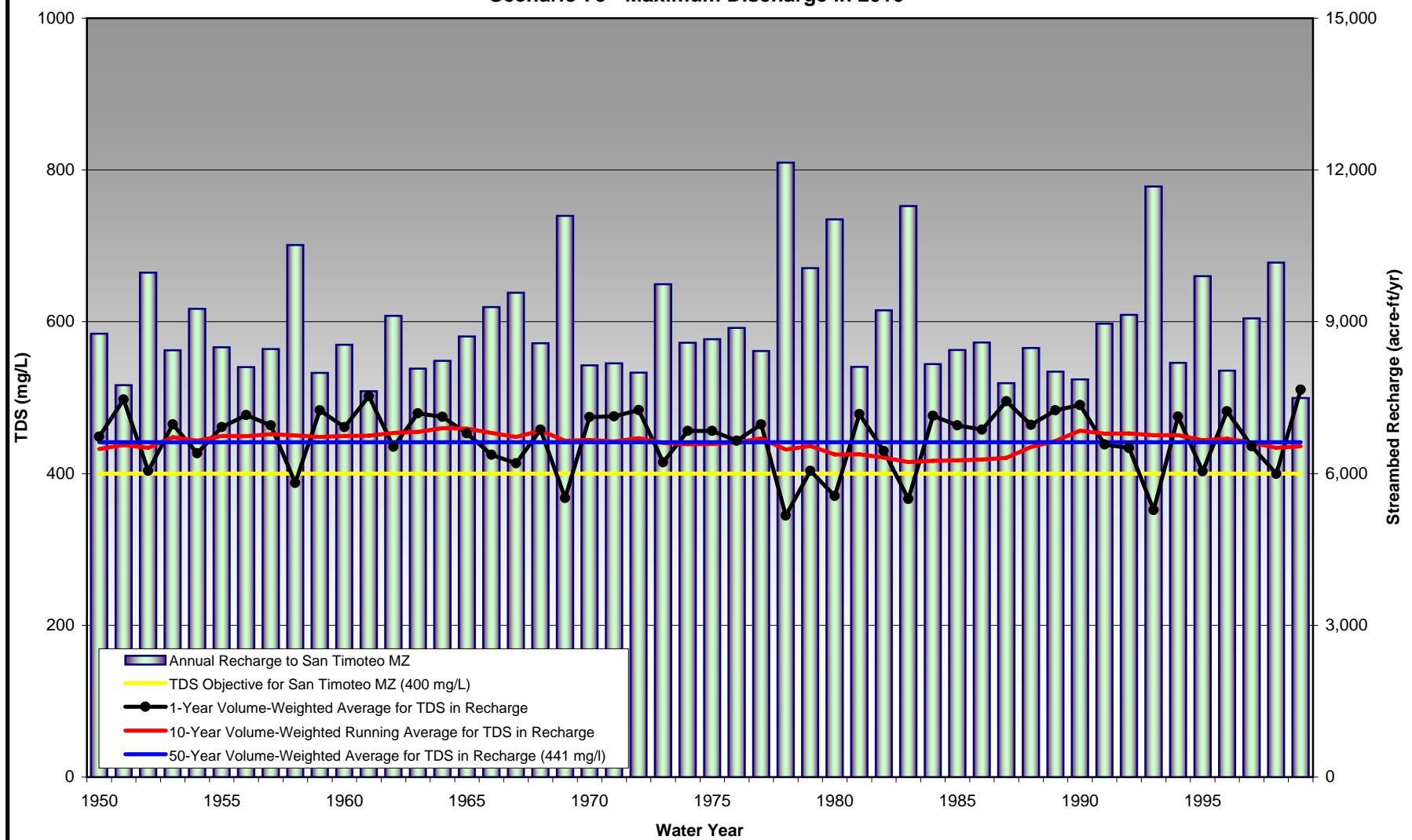


Figure 7c-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7c - Maximum Discharge in 2010

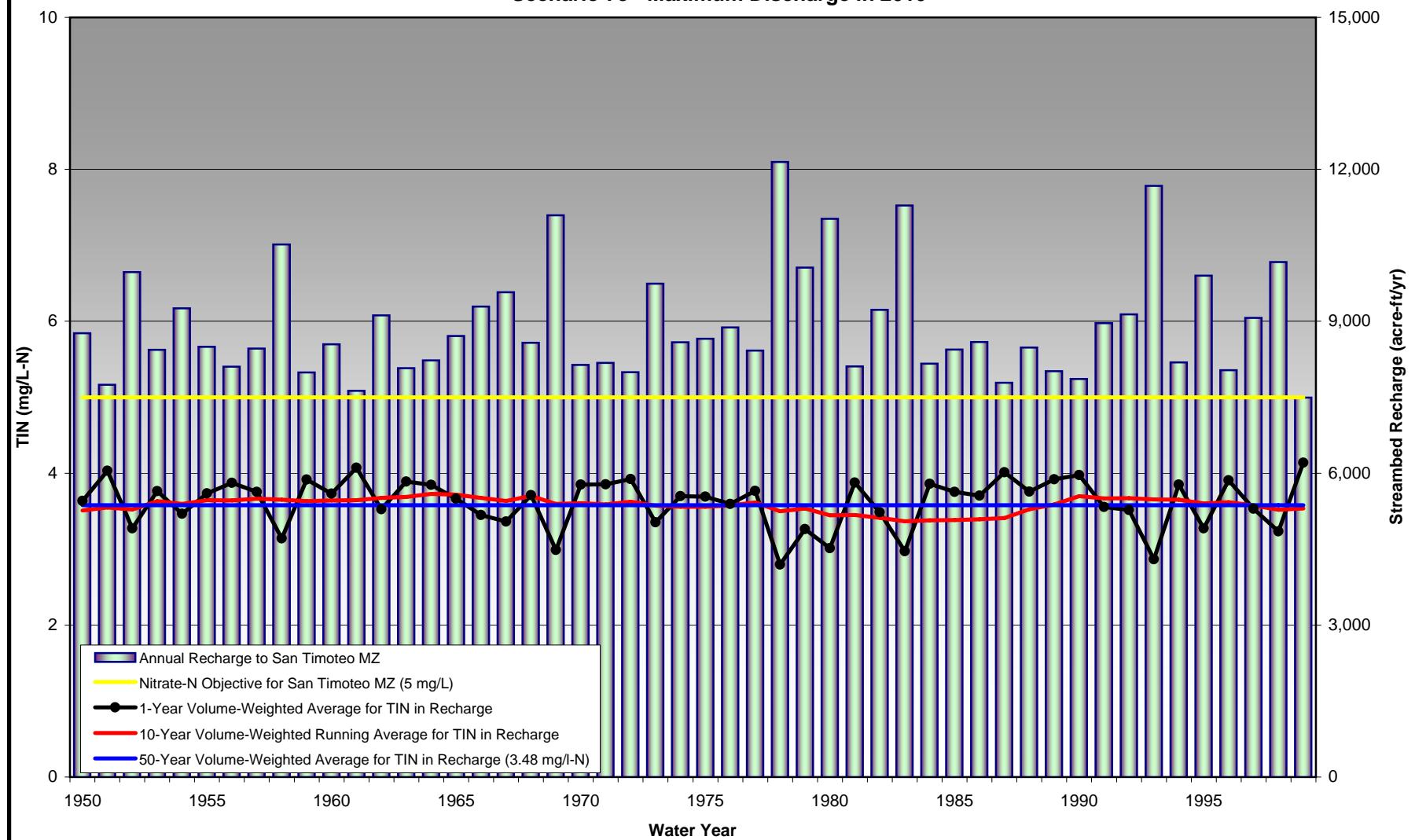


Table 7c-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 7c - Maximum Discharge in 2010

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	425	391	407	3.82	3.51	3.66
1951	477	398	407	4.30	3.58	3.66
1952	365	393	407	3.28	3.54	3.66
1953	459	414	407	4.13	3.72	3.66
1954	376	406	407	3.38	3.65	3.66
1955	446	419	407	4.01	3.77	3.66
1956	430	418	407	3.88	3.76	3.66
1957	444	423	407	3.99	3.80	3.66
1958	348	419	407	3.12	3.77	3.66
1959	461	418	407	4.15	3.75	3.66
1960	459	420	407	4.12	3.78	3.66
1961	480	421	407	4.33	3.78	3.66
1962	403	426	407	3.62	3.83	3.66
1963	453	425	407	4.07	3.82	3.66
1964	458	434	407	4.12	3.90	3.66
1965	425	432	407	3.81	3.88	3.66
1966	381	426	407	3.42	3.83	3.66
1967	356	416	407	3.20	3.74	3.66
1968	429	426	407	3.86	3.83	3.66
1969	309	407	407	2.78	3.66	3.66
1970	431	404	407	3.88	3.64	3.66
1971	445	402	407	4.01	3.61	3.66
1972	449	406	407	4.04	3.65	3.66
1973	407	402	407	3.65	3.61	3.66
1974	425	399	407	3.82	3.59	3.66
1975	437	400	407	3.93	3.60	3.66
1976	405	403	407	3.64	3.62	3.66
1977	448	413	407	4.03	3.71	3.66
1978	317	398	407	2.83	3.58	3.66
1979	377	409	407	3.38	3.67	3.66
1980	320	395	407	2.86	3.55	3.66
1981	466	396	407	4.19	3.56	3.66
1982	382	390	407	3.44	3.50	3.66
1983	321	380	407	2.87	3.41	3.66
1984	450	382	407	4.05	3.43	3.66
1985	441	382	407	3.96	3.43	3.66
1986	429	384	407	3.85	3.45	3.66
1987	475	386	407	4.27	3.46	3.66
1988	460	401	407	4.13	3.61	3.66
1989	467	410	407	4.21	3.68	3.66
1990	462	428	407	4.16	3.84	3.66
1991	389	420	407	3.50	3.78	3.66
1992	409	423	407	3.68	3.80	3.66
1993	296	418	407	2.66	3.76	3.66
1994	453	418	407	4.08	3.76	3.66
1995	337	406	407	3.03	3.65	3.66
1996	437	407	407	3.94	3.66	3.66
1997	400	401	407	3.59	3.60	3.66
1998	372	393	407	3.33	3.53	3.66
1999	483	394	407	4.35	3.54	3.66
Maximum	483	434		4.35	3.90	

Figure 7c-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7c - Maximum Discharge in 2010

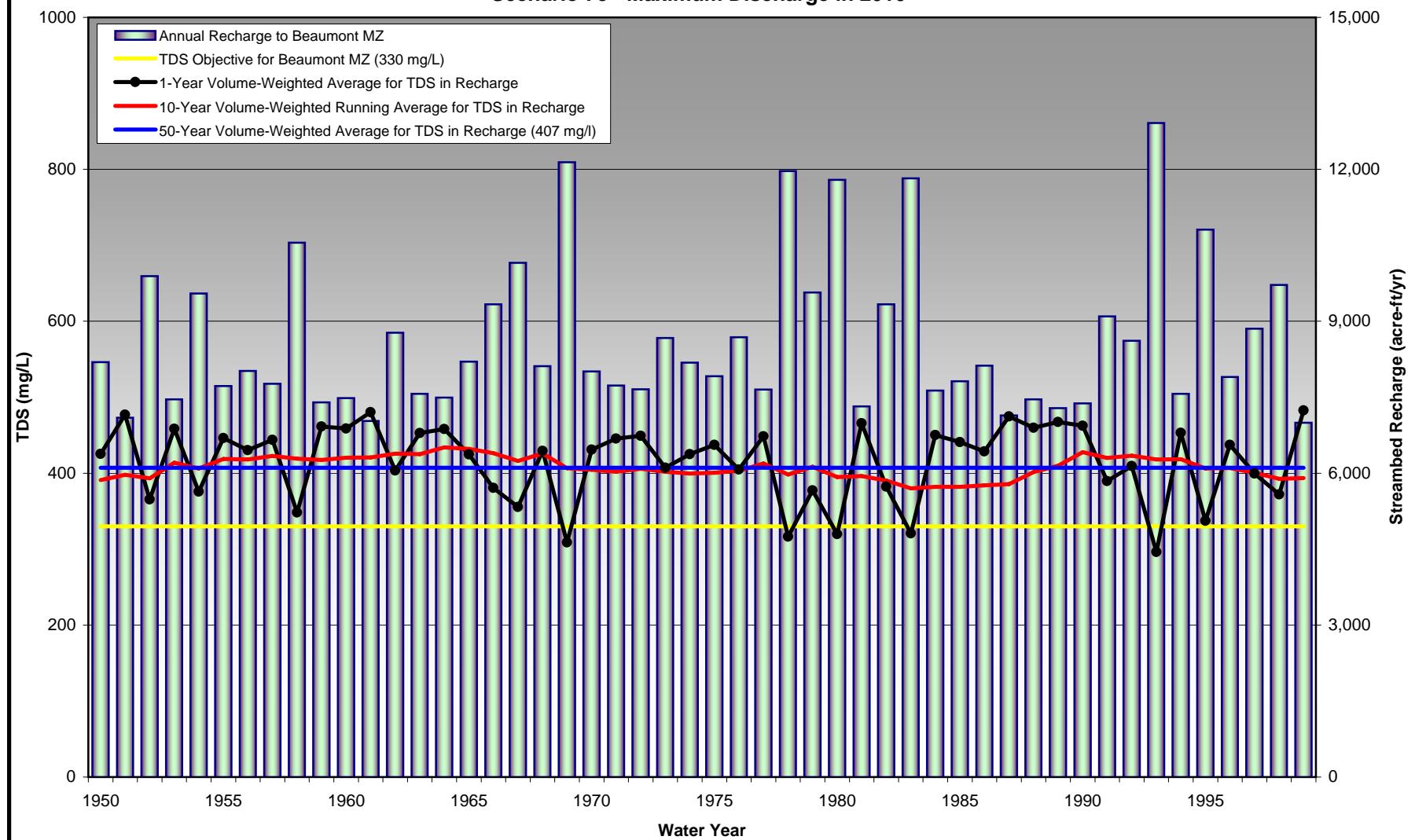


Figure 7c-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7c - Maximum Discharge in 2010

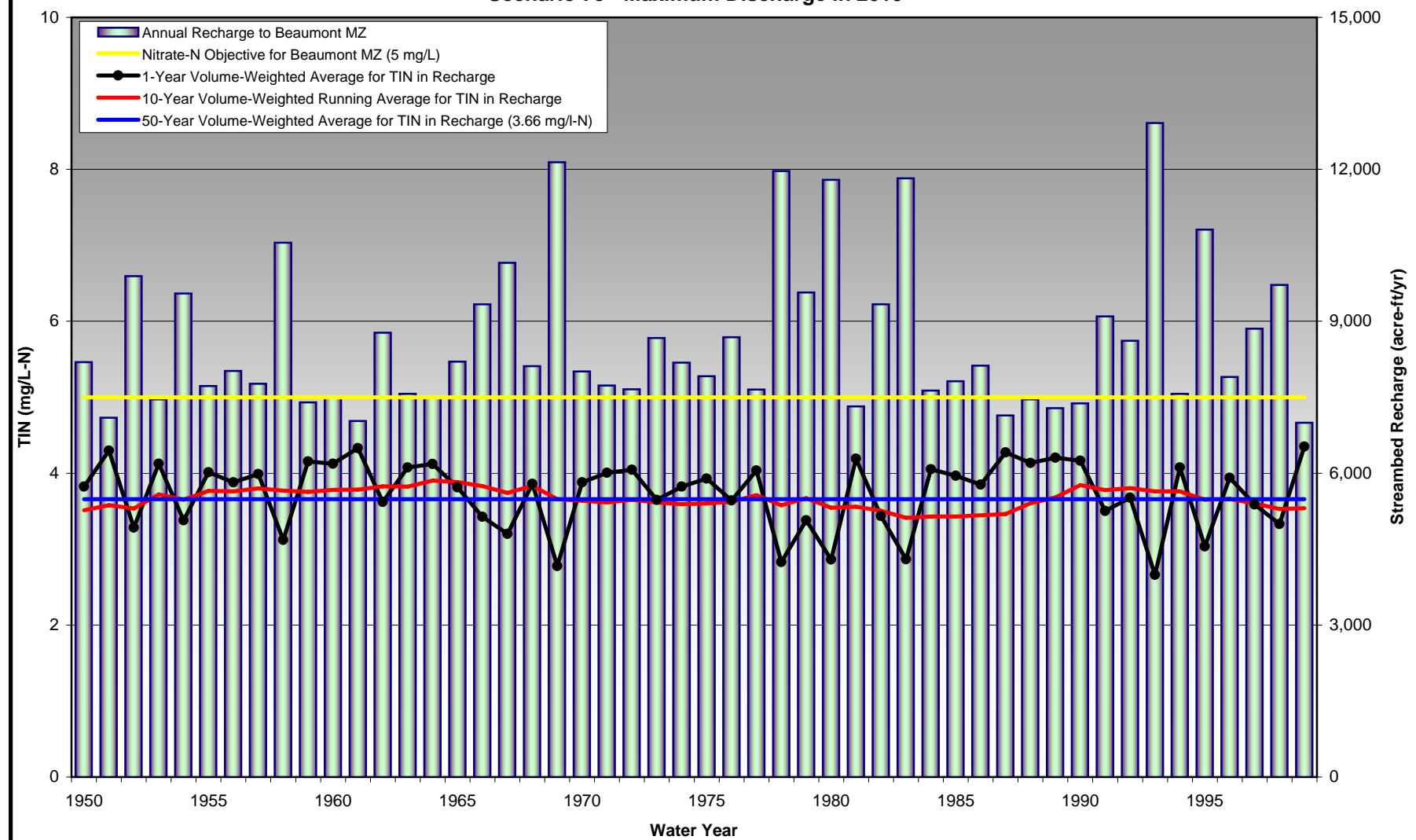


Table 7d-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 7d - Planned Reuse in 2020

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only
1950	530	495	467	406	437	652	6.28	5.86	5.53	4.67	5.09	7.50
1951	607	516	482	417	437	652	7.20	6.11	5.70	4.79	5.09	7.50
1952	344	489	443	406	437	652	4.07	5.79	5.24	4.67	5.09	7.50
1953	571	535	502	452	437	652	6.76	6.34	5.94	5.30	5.09	7.50
1954	453	501	474	443	437	652	5.35	5.93	5.61	5.20	5.09	7.50
1955	542	503	476	472	437	651	6.42	5.96	5.63	5.58	5.09	7.49
1956	425	467	447	464	437	652	5.09	5.54	5.30	5.49	5.09	7.50
1957	552	508	500	469	437	652	6.53	6.03	5.93	5.56	5.09	7.50
1958	374	469	456	477	437	631	4.38	5.55	5.39	5.65	5.09	7.24
1959	602	499	478	476	437	652	7.15	5.91	5.66	5.64	5.09	7.50
1960	568	504	482	479	437	652	6.73	5.97	5.70	5.67	5.09	7.50
1961	630	545	519	480	437	638	7.50	6.46	6.13	5.68	5.09	7.33
1962	461	527	500	500	437	653	5.45	6.24	5.91	5.92	5.09	7.51
1963	513	555	546	495	437	652	6.09	6.58	6.47	5.87	5.09	7.50
1964	567	548	540	507	437	652	6.73	6.50	6.40	6.00	5.09	7.50
1965	519	538	530	505	437	643	6.13	6.38	6.29	5.98	5.09	7.40
1966	385	489	478	497	437	652	4.52	5.78	5.65	5.88	5.09	7.50
1967	344	466	443	469	437	642	4.02	5.50	5.22	5.54	5.09	7.38
1968	495	462	440	486	437	652	5.89	5.46	5.20	5.75	5.09	7.50
1969	240	396	351	419	437	636	2.72	4.65	4.10	4.93	5.09	7.29
1970	529	398	352	417	437	652	6.27	4.68	4.11	4.90	5.09	7.49
1971	542	430	368	413	437	651	6.42	5.06	4.31	4.86	5.09	7.49
1972	533	468	397	418	437	634	6.33	5.52	4.65	4.91	5.09	7.28
1973	448	458	391	414	437	653	5.26	5.40	4.57	4.86	5.09	7.51
1974	480	507	503	409	437	653	5.70	5.99	5.95	4.80	5.09	7.51
1975	539	509	505	410	437	653	6.39	6.02	5.97	4.82	5.09	7.51
1976	540	508	504	422	437	653	6.37	6.01	5.96	4.96	5.09	7.51
1977	535	509	505	442	437	367	6.35	6.01	5.96	5.20	5.09	4.16
1978	282	475	430	409	437	653	3.24	5.61	5.05	4.80	5.09	7.51
1979	423	464	420	456	437	653	4.92	5.45	4.92	5.37	5.09	7.51
1980	298	416	366	418	437	650	2.92	4.76	4.09	4.79	5.09	7.47
1981	572	422	368	419	437	653	6.78	4.84	4.11	4.81	5.09	7.51
1982	411	397	357	411	437	652	4.85	4.54	3.98	4.71	5.09	7.49
1983	333	408	372	397	437	456	3.61	4.61	4.11	4.51	5.09	5.17
1984	532	429	383	400	437	650	6.30	4.89	4.23	4.54	5.09	7.48
1985	520	473	443	399	437	653	6.15	5.54	5.14	4.53	5.09	7.51
1986	472	453	431	395	437	652	5.56	5.29	4.99	4.49	5.09	7.50
1987	591	489	458	397	437	653	7.02	5.73	5.30	4.51	5.09	7.51
1988	515	526	522	427	437	652	6.10	6.23	6.18	4.87	5.09	7.50
1989	569	533	529	437	437	653	6.74	6.31	6.26	4.99	5.09	7.51
1990	576	545	539	485	437	653	6.85	6.45	6.39	5.67	5.09	7.51
1991	419	534	523	470	437	652	4.94	6.33	6.20	5.51	5.09	7.50
1992	438	504	492	474	437	653	5.16	5.96	5.82	5.55	5.09	7.51
1993	275	455	399	448	437	652	2.83	5.30	4.54	5.20	5.09	7.50
1994	567	455	399	450	437	653	6.71	5.30	4.54	5.22	5.09	7.51
1995	333	406	365	427	437	653	3.67	4.66	4.10	4.92	5.09	7.51
1996	499	422	373	429	437	653	5.93	4.86	4.19	4.94	5.09	7.51
1997	484	431	378	423	437	653	5.70	4.97	4.25	4.87	5.09	7.51
1998	339	444	414	406	437	639	3.97	5.20	4.81	4.67	5.09	7.35
1999	623	455	418	408	437	653	7.40	5.33	4.86	4.69	5.09	7.51
Maximum	630	555	546	507	437	653	7.50	6.58	6.47	6.00	5.09	7.51

Figure 7d-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7d - Planned Reuse in 2020

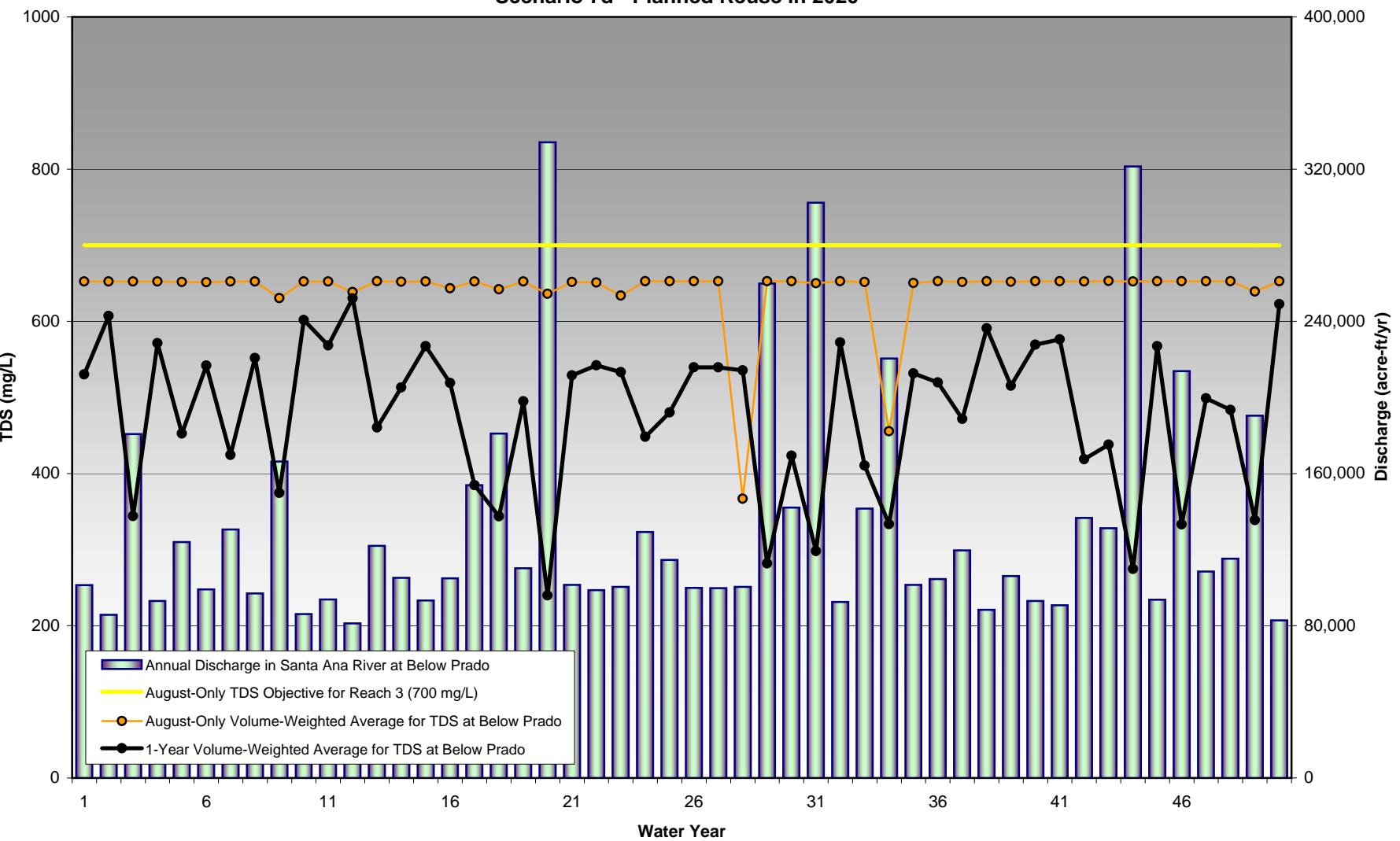


Figure 7d-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7d - Planned Reuse in 2020

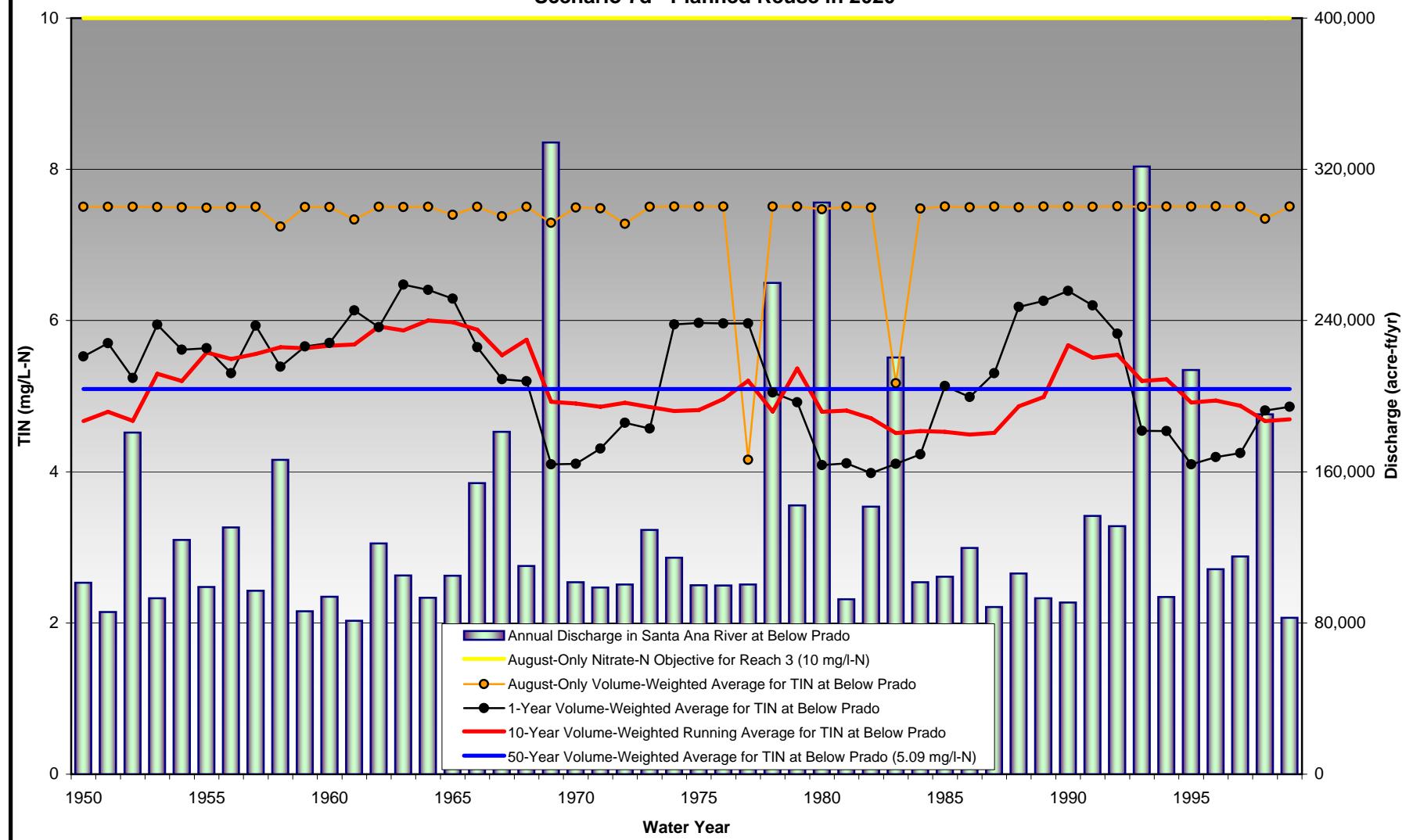


Figure 7d-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 7d - Planned Reuse in 2020

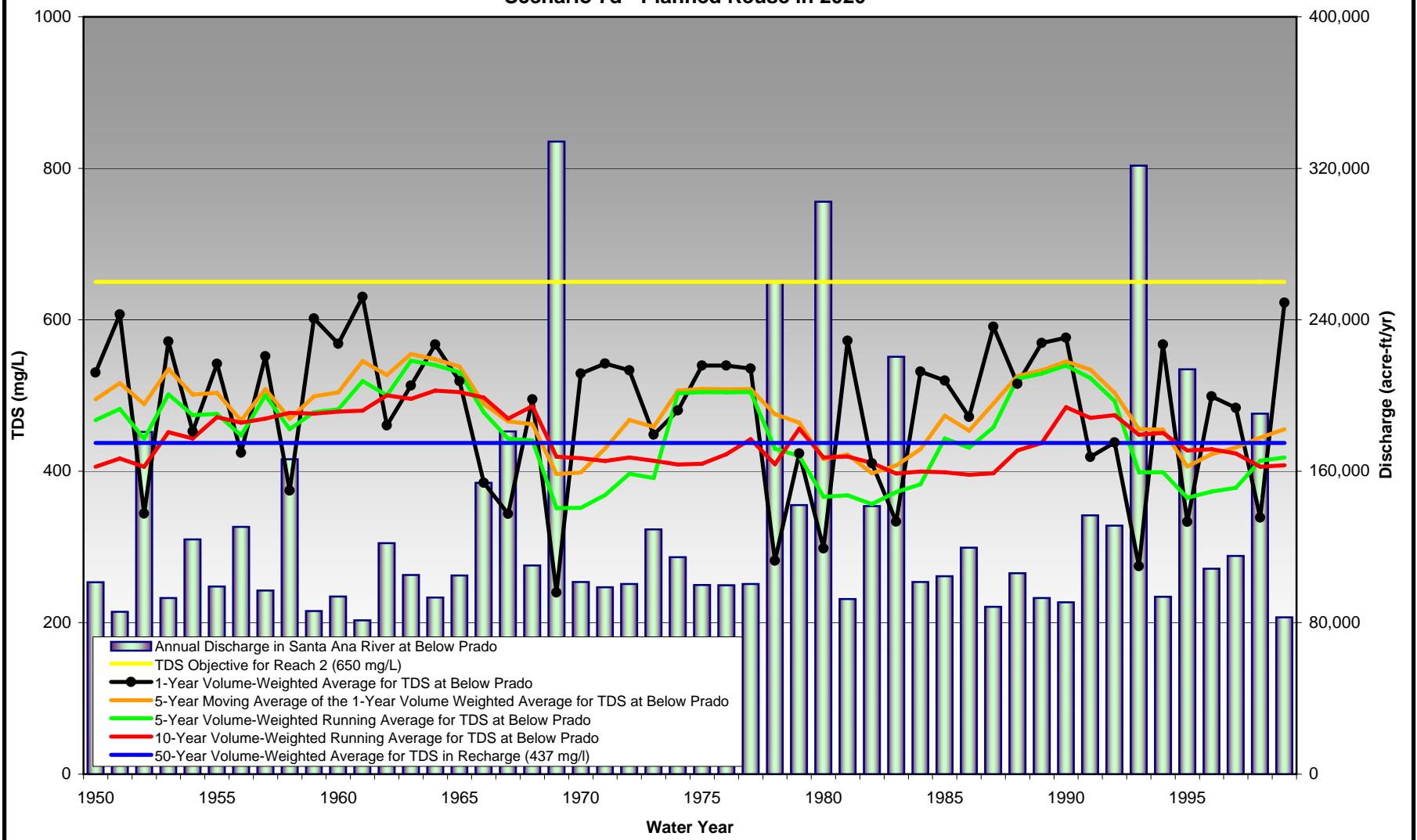


Table 7d-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 7d - Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	599	552	570	4.15	3.78	3.92
1951	619	556	570	4.29	3.81	3.92
1952	522	552	570	3.60	3.78	3.92
1953	609	572	570	4.22	3.95	3.92
1954	571	569	570	3.95	3.92	3.92
1955	598	580	570	4.15	4.01	3.92
1956	587	579	570	4.07	4.00	3.92
1957	606	581	570	4.20	4.02	3.92
1958	527	584	570	3.62	4.04	3.92
1959	623	584	570	4.33	4.04	3.92
1960	613	585	570	4.26	4.05	3.92
1961	628	586	570	4.36	4.06	3.92
1962	576	592	570	3.99	4.10	3.92
1963	595	591	570	4.12	4.09	3.92
1964	612	595	570	4.24	4.12	3.92
1965	595	595	570	4.12	4.12	3.92
1966	549	591	570	3.78	4.09	3.92
1967	527	582	570	3.63	4.03	3.92
1968	594	590	570	4.12	4.08	3.92
1969	444	568	570	2.97	3.92	3.92
1970	603	567	570	4.18	3.91	3.92
1971	603	565	570	4.18	3.90	3.92
1972	606	568	570	4.20	3.92	3.92
1973	572	566	570	3.95	3.90	3.92
1974	586	563	570	4.06	3.88	3.92
1975	605	564	570	4.20	3.89	3.92
1976	596	569	570	4.13	3.92	3.92
1977	608	577	570	4.22	3.99	3.92
1978	462	562	570	3.12	3.87	3.92
1979	554	576	570	3.78	3.98	3.92
1980	466	560	570	3.03	3.84	3.92
1981	615	561	570	4.27	3.85	3.92
1982	552	556	570	3.81	3.81	3.92
1983	493	547	570	3.27	3.74	3.92
1984	598	549	570	4.14	3.74	3.92
1985	596	548	570	4.13	3.74	3.92
1986	585	547	570	4.05	3.73	3.92
1987	620	548	570	4.30	3.74	3.92
1988	601	563	570	4.16	3.85	3.92
1989	613	569	570	4.25	3.90	3.92
1990	609	586	570	4.23	4.04	3.92
1991	566	581	570	3.92	4.01	3.92
1992	565	583	570	3.90	4.02	3.92
1993	436	573	570	2.85	3.95	3.92
1994	607	574	570	4.21	3.95	3.92
1995	500	563	570	3.34	3.87	3.92
1996	601	565	570	4.17	3.88	3.92
1997	578	561	570	3.99	3.85	3.92
1998	505	552	570	3.46	3.78	3.92
1999	624	552	570	4.33	3.79	3.92
Maximum	628	595		4.36	4.12	

Figure 7d-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7d - Planned Reuse in 2020

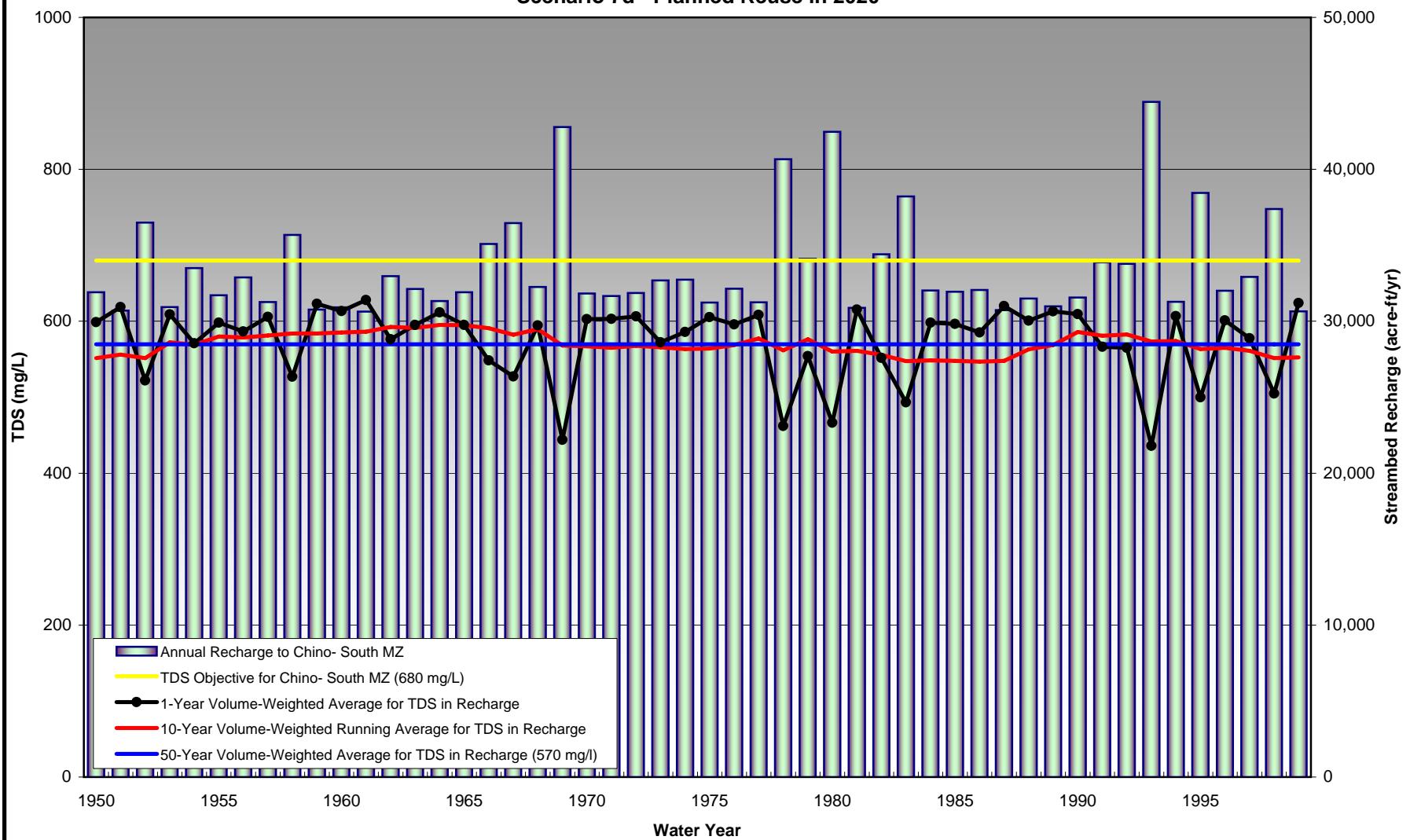


Figure 7d-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7d - Planned Reuse in 2020

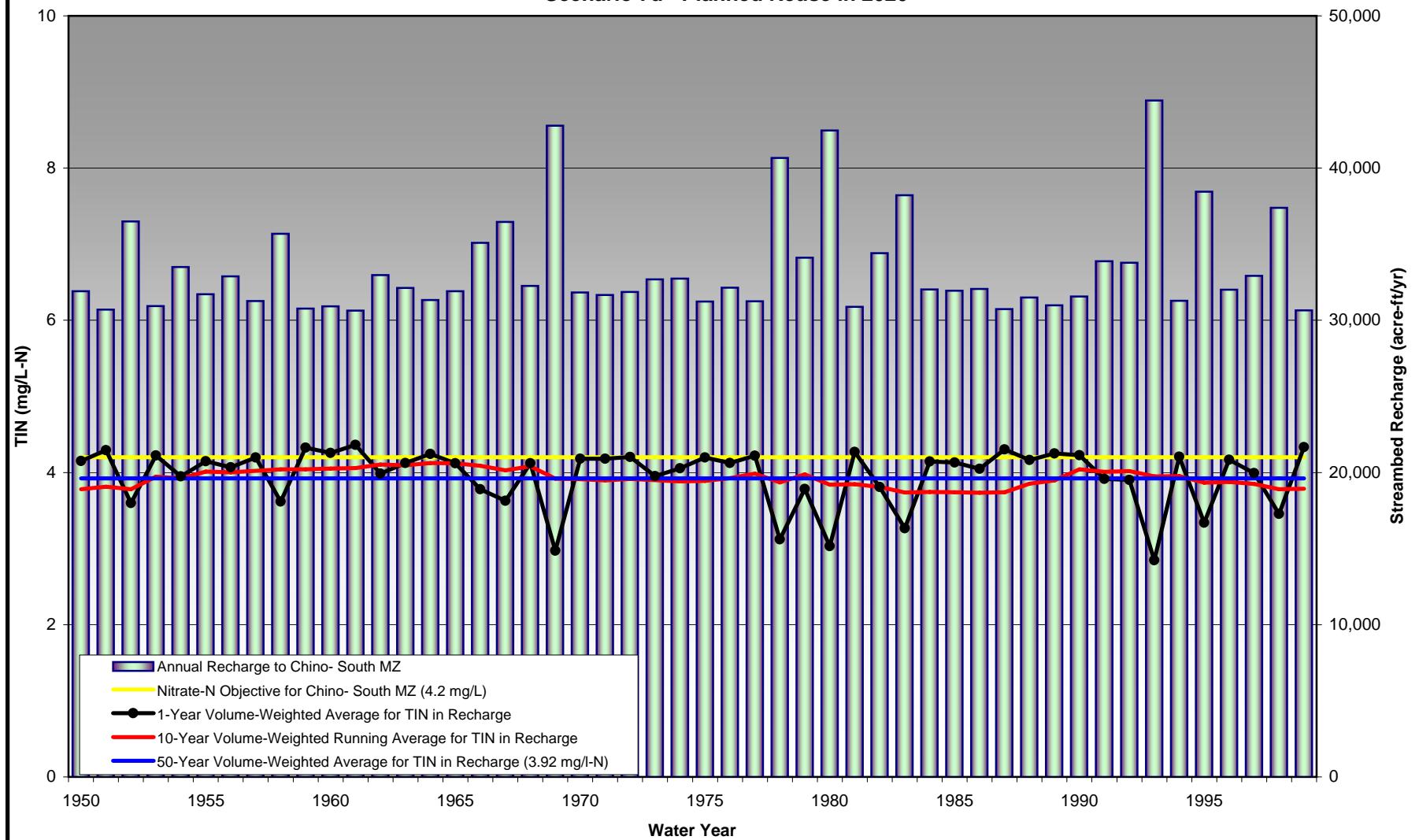


Table 7d-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 7d - Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	455	390	418	6.14	5.10	5.54
1951	516	397	418	7.06	5.20	5.54
1952	361	393	418	4.75	5.14	5.54
1953	492	424	418	6.69	5.65	5.54
1954	417	419	418	5.56	5.56	5.54
1955	467	434	418	6.33	5.81	5.54
1956	463	434	418	6.31	5.82	5.54
1957	487	441	418	6.62	5.92	5.54
1958	356	444	418	4.57	5.96	5.54
1959	506	442	418	6.92	5.95	5.54
1960	503	446	418	6.87	6.01	5.54
1961	525	447	418	7.21	6.02	5.54
1962	423	456	418	5.65	6.15	5.54
1963	472	454	418	6.41	6.13	5.54
1964	486	462	418	6.62	6.24	5.54
1965	450	460	418	6.05	6.21	5.54
1966	389	451	418	5.11	6.07	5.54
1967	367	437	418	4.79	5.86	5.54
1968	457	450	418	6.17	6.07	5.54
1969	284	417	418	3.36	5.52	5.54
1970	459	414	418	6.21	5.48	5.54
1971	459	410	418	6.19	5.41	5.54
1972	483	414	418	6.58	5.49	5.54
1973	421	410	418	5.58	5.42	5.54
1974	444	407	418	5.98	5.37	5.54
1975	484	409	418	6.57	5.41	5.54
1976	449	415	418	6.05	5.50	5.54
1977	484	427	418	6.59	5.68	5.54
1978	299	405	418	3.63	5.32	5.54
1979	407	427	418	5.37	5.69	5.54
1980	298	403	418	3.58	5.29	5.54
1981	502	406	418	6.85	5.33	5.54
1982	391	398	418	5.18	5.22	5.54
1983	319	386	418	4.01	5.03	5.54
1984	463	387	418	6.25	5.05	5.54
1985	471	386	418	6.37	5.04	5.54
1986	451	387	418	6.06	5.04	5.54
1987	513	388	418	7.02	5.06	5.54
1988	474	409	418	6.41	5.40	5.54
1989	483	415	418	6.55	5.49	5.54
1990	486	444	418	6.62	5.96	5.54
1991	411	435	418	5.48	5.83	5.54
1992	397	436	418	5.25	5.84	5.54
1993	275	422	418	3.23	5.60	5.54
1994	480	423	418	6.51	5.62	5.54
1995	340	409	418	4.32	5.39	5.54
1996	460	409	418	6.20	5.40	5.54
1997	416	402	418	5.51	5.29	5.54
1998	343	390	418	4.34	5.09	5.54
1999	522	392	418	7.16	5.13	5.54
Maximum	525	462		7.21	6.24	

Figure 7d-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7d - Planned Reuse in 2020

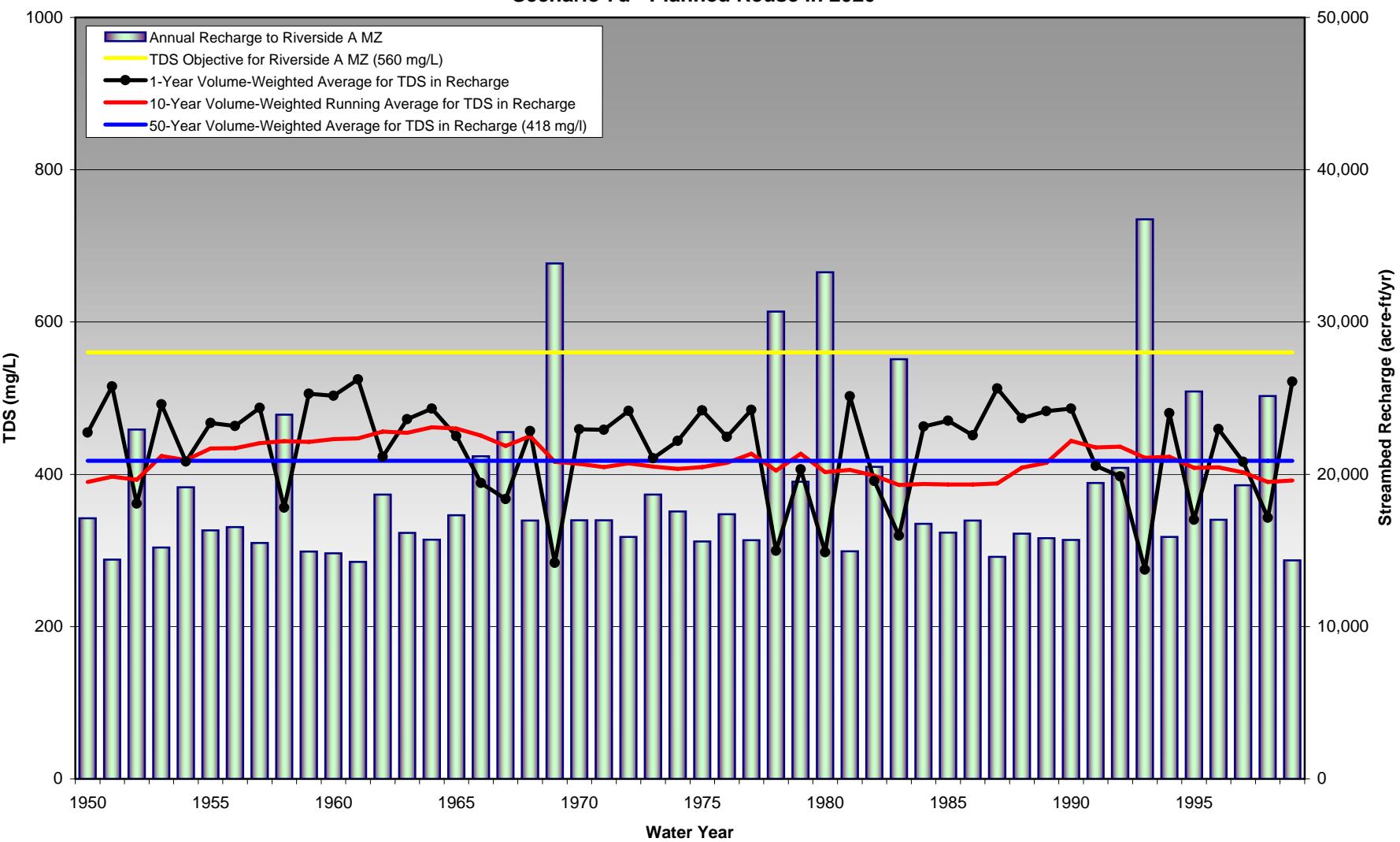


Figure 7d-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7d - Planned Reuse in 2020

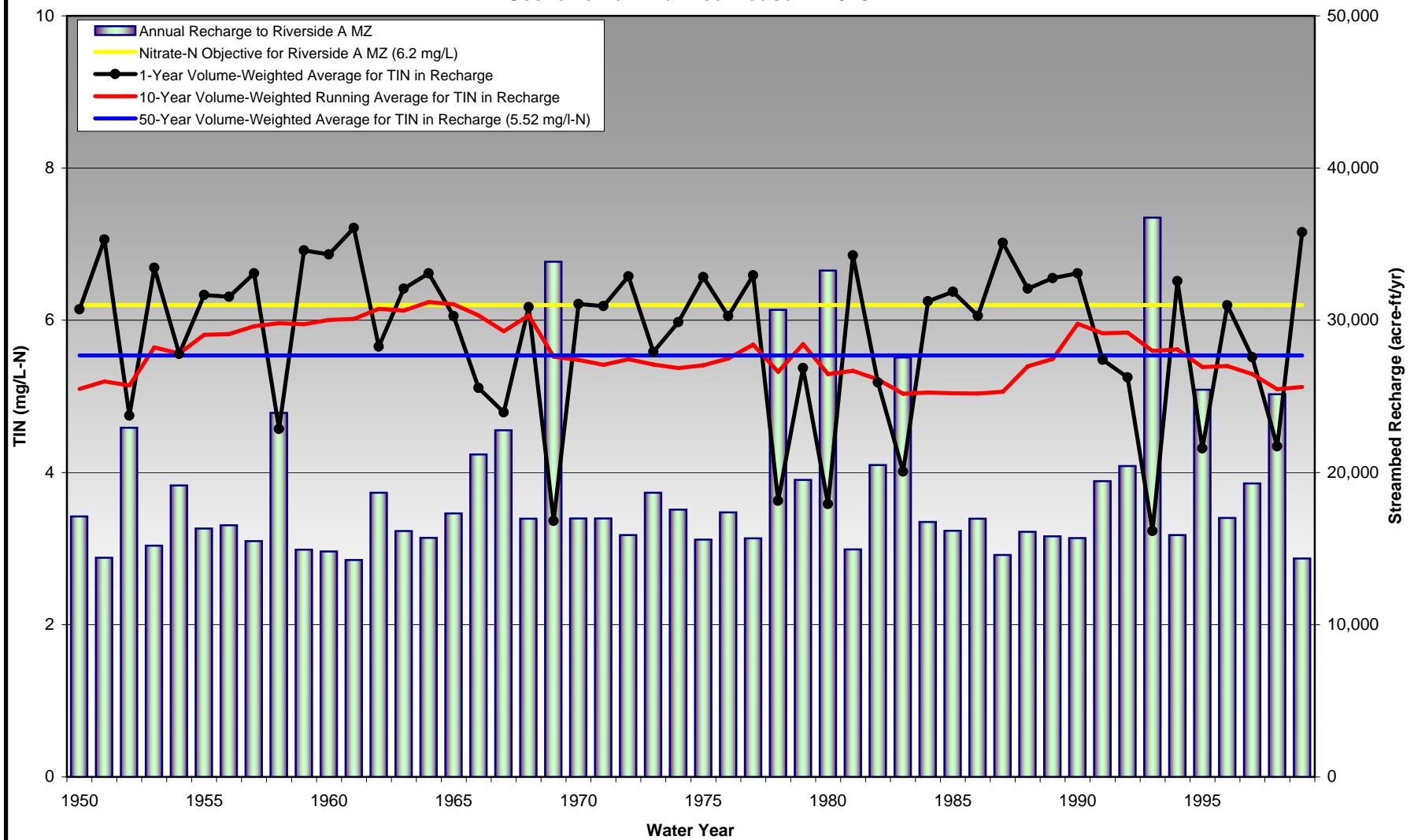


Table 7d-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 7d - Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	139	152	151	1.12	1.17	1.16
1951	162	154	151	1.22	1.18	1.16
1952	138	153	151	1.11	1.18	1.16
1953	157	153	151	1.20	1.18	1.16
1954	141	151	151	1.12	1.17	1.16
1955	146	151	151	1.16	1.17	1.16
1956	125	149	151	1.03	1.16	1.16
1957	157	149	151	1.20	1.16	1.16
1958	151	146	151	1.17	1.15	1.16
1959	163	145	151	1.23	1.14	1.16
1960	153	146	151	1.18	1.15	1.16
1961	158	146	151	1.21	1.15	1.16
1962	144	148	151	1.14	1.16	1.16
1963	134	146	151	1.08	1.15	1.16
1964	150	147	151	1.16	1.15	1.16
1965	146	147	151	1.14	1.15	1.16
1966	139	147	151	1.11	1.15	1.16
1967	144	146	151	1.13	1.14	1.16
1968	140	144	151	1.11	1.13	1.16
1969	160	150	151	1.20	1.16	1.16
1970	138	149	151	1.11	1.15	1.16
1971	145	149	151	1.16	1.15	1.16
1972	148	149	151	1.16	1.16	1.16
1973	154	150	151	1.20	1.16	1.16
1974	138	150	151	1.10	1.16	1.16
1975	160	150	151	1.21	1.16	1.16
1976	136	150	151	1.08	1.16	1.16
1977	146	151	151	1.14	1.17	1.16
1978	156	153	151	1.18	1.17	1.16
1979	152	150	151	1.17	1.16	1.16
1980	156	152	151	1.19	1.17	1.16
1981	166	153	151	1.24	1.17	1.16
1982	130	151	151	1.06	1.16	1.16
1983	154	152	151	1.20	1.17	1.16
1984	158	152	151	1.21	1.17	1.16
1985	146	152	151	1.13	1.17	1.16
1986	155	153	151	1.19	1.18	1.16
1987	164	153	151	1.23	1.18	1.16
1988	150	152	151	1.15	1.18	1.16
1989	157	153	151	1.20	1.18	1.16
1990	152	151	151	1.17	1.17	1.16
1991	137	149	151	1.10	1.16	1.16
1992	135	149	151	1.08	1.16	1.16
1993	156	151	151	1.17	1.16	1.16
1994	160	151	151	1.21	1.16	1.16
1995	152	152	151	1.16	1.16	1.16
1996	156	152	151	1.19	1.16	1.16
1997	151	151	151	1.17	1.16	1.16
1998	159	153	151	1.22	1.17	1.16
1999	179	153	151	1.32	1.17	1.16
Maximum	179	154		1.32	1.18	

Figure 7d-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7d - Planned Reuse in 2020

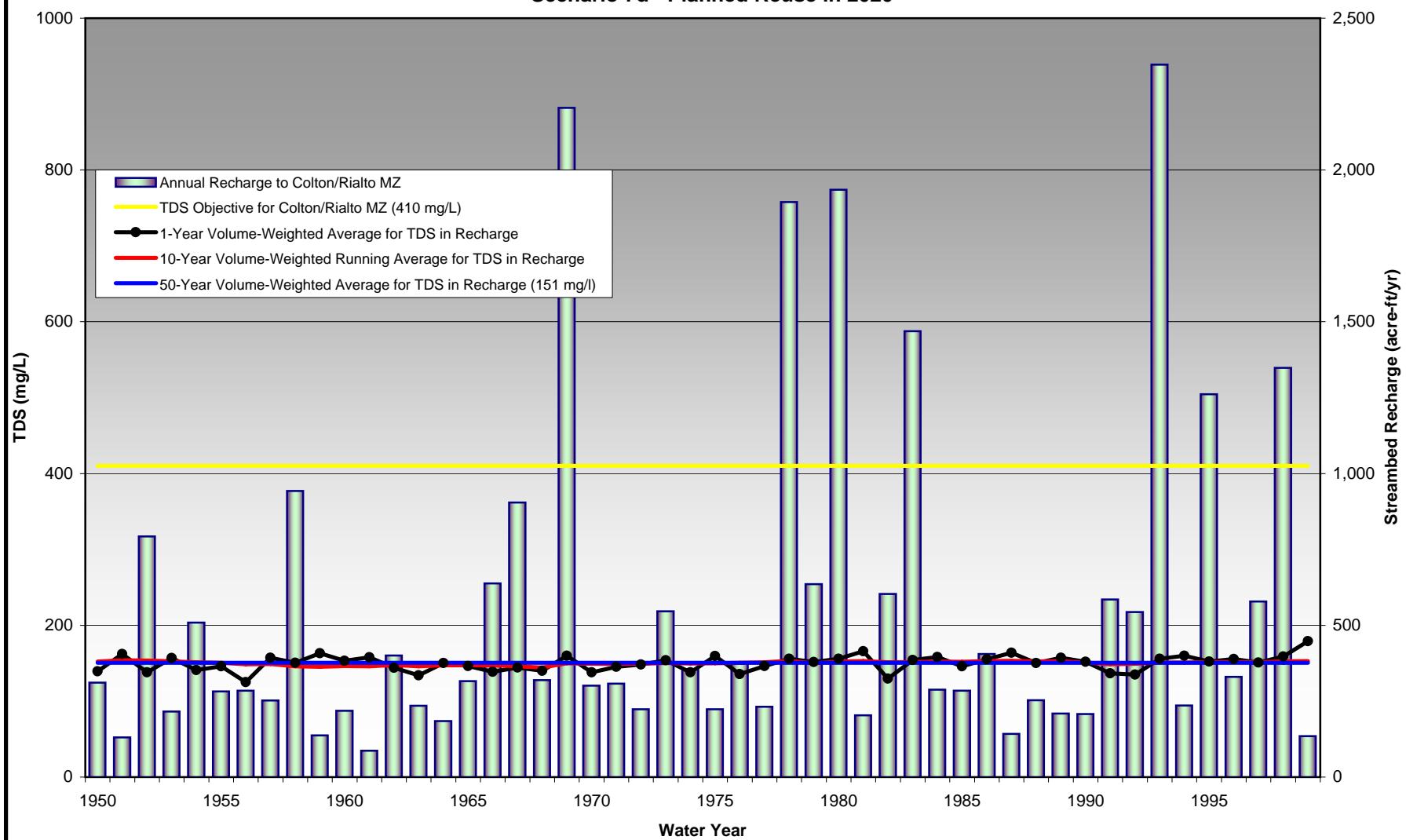


Figure 7d-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7d - Planned Reuse in 2020

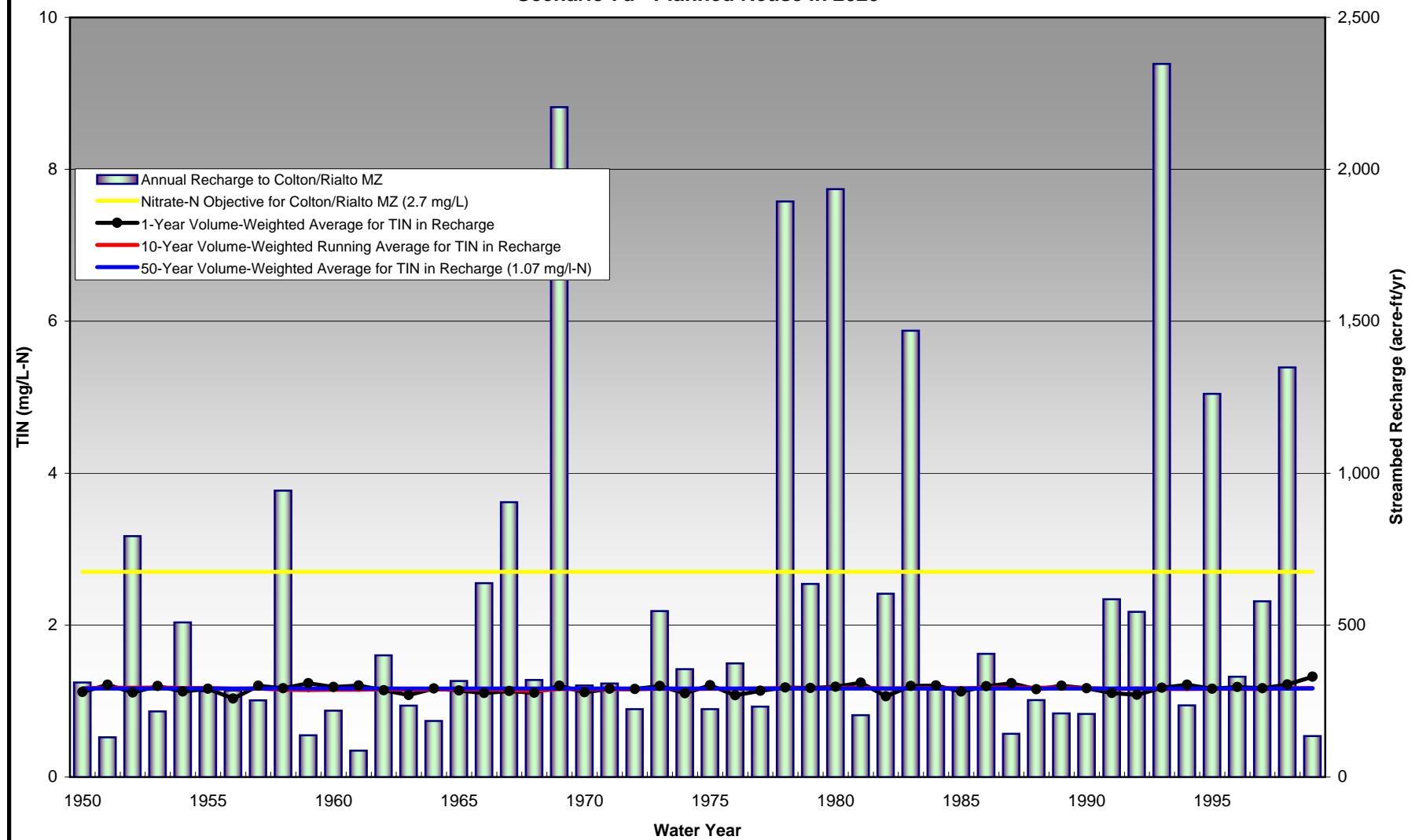


Table 7d-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 7d - Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	185	187	186	1.42	1.40	1.40
1951	201	188	186	1.54	1.41	1.40
1952	178	188	186	1.35	1.41	1.40
1953	192	190	186	1.46	1.43	1.40
1954	177	188	186	1.36	1.42	1.40
1955	186	188	186	1.43	1.42	1.40
1956	194	188	186	1.49	1.42	1.40
1957	190	188	186	1.44	1.42	1.40
1958	175	186	186	1.33	1.41	1.40
1959	198	185	186	1.50	1.41	1.40
1960	184	185	186	1.41	1.40	1.40
1961	208	185	186	1.60	1.41	1.40
1962	181	185	186	1.38	1.41	1.40
1963	187	185	186	1.44	1.41	1.40
1964	191	186	186	1.46	1.42	1.40
1965	183	186	186	1.40	1.42	1.40
1966	179	185	186	1.37	1.41	1.40
1967	188	185	186	1.41	1.41	1.40
1968	186	187	186	1.42	1.42	1.40
1969	185	186	186	1.36	1.40	1.40
1970	189	186	186	1.45	1.40	1.40
1971	191	186	186	1.46	1.40	1.40
1972	199	187	186	1.52	1.41	1.40
1973	182	186	186	1.38	1.40	1.40
1974	187	186	186	1.43	1.40	1.40
1975	191	187	186	1.44	1.40	1.40
1976	181	187	186	1.39	1.41	1.40
1977	187	187	186	1.43	1.41	1.40
1978	177	185	186	1.31	1.39	1.40
1979	181	184	186	1.36	1.39	1.40
1980	184	184	186	1.37	1.38	1.40
1981	197	184	186	1.48	1.39	1.40
1982	178	183	186	1.36	1.38	1.40
1983	179	182	186	1.34	1.37	1.40
1984	200	183	186	1.50	1.38	1.40
1985	189	183	186	1.43	1.38	1.40
1986	186	183	186	1.41	1.38	1.40
1987	201	184	186	1.52	1.38	1.40
1988	184	185	186	1.40	1.40	1.40
1989	189	186	186	1.44	1.40	1.40
1990	200	187	186	1.52	1.42	1.40
1991	180	186	186	1.39	1.41	1.40
1992	173	186	186	1.33	1.41	1.40
1993	179	186	186	1.33	1.40	1.40
1994	196	186	186	1.48	1.40	1.40
1995	188	186	186	1.39	1.40	1.40
1996	199	187	186	1.50	1.40	1.40
1997	188	186	186	1.42	1.40	1.40
1998	188	186	186	1.40	1.40	1.40
1999	215	187	186	1.61	1.41	1.40
Maximum	215	190		1.61	1.43	

Figure 7d-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7d - Planned Reuse in 2020

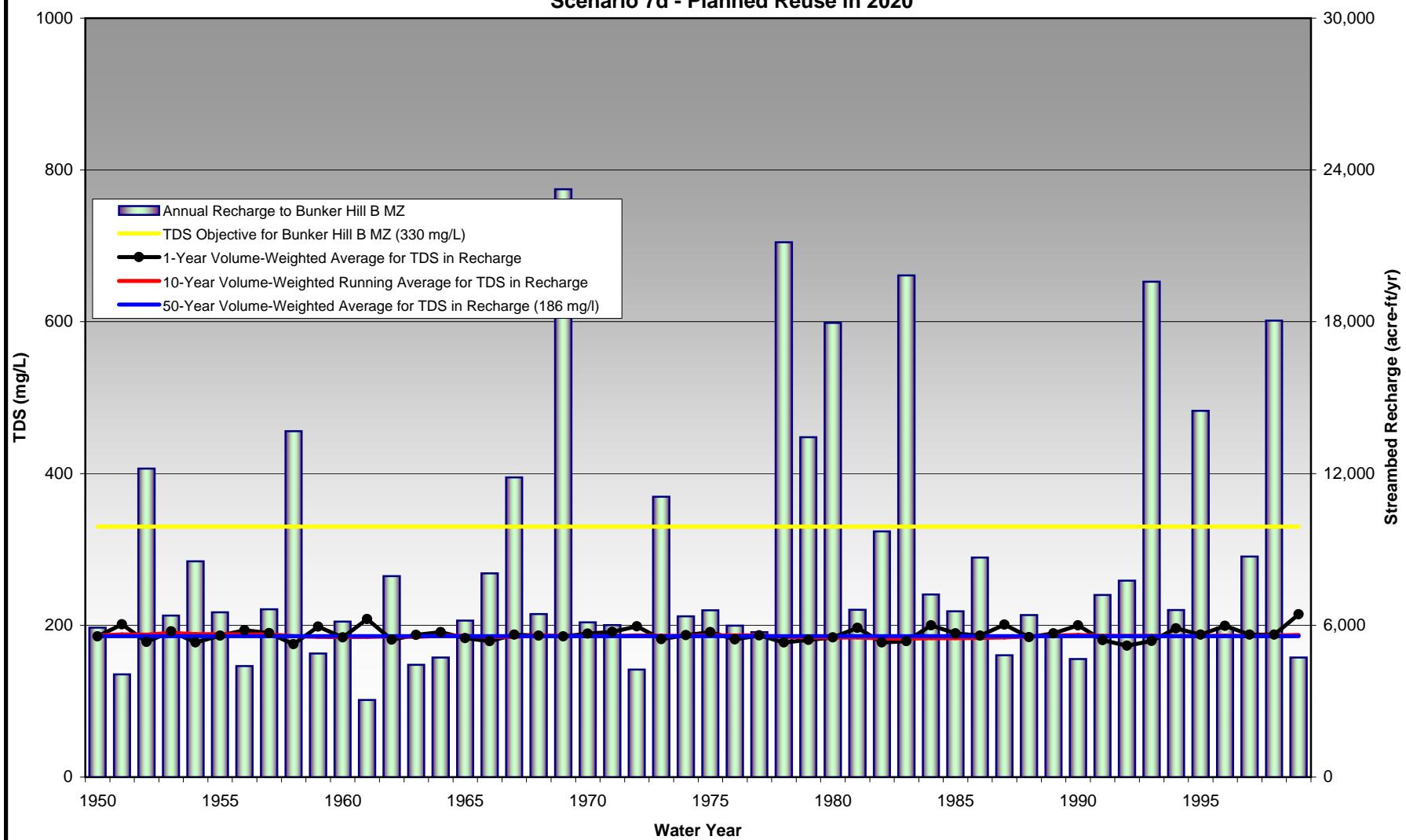


Figure 7d-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7d - Planned Reuse in 2020

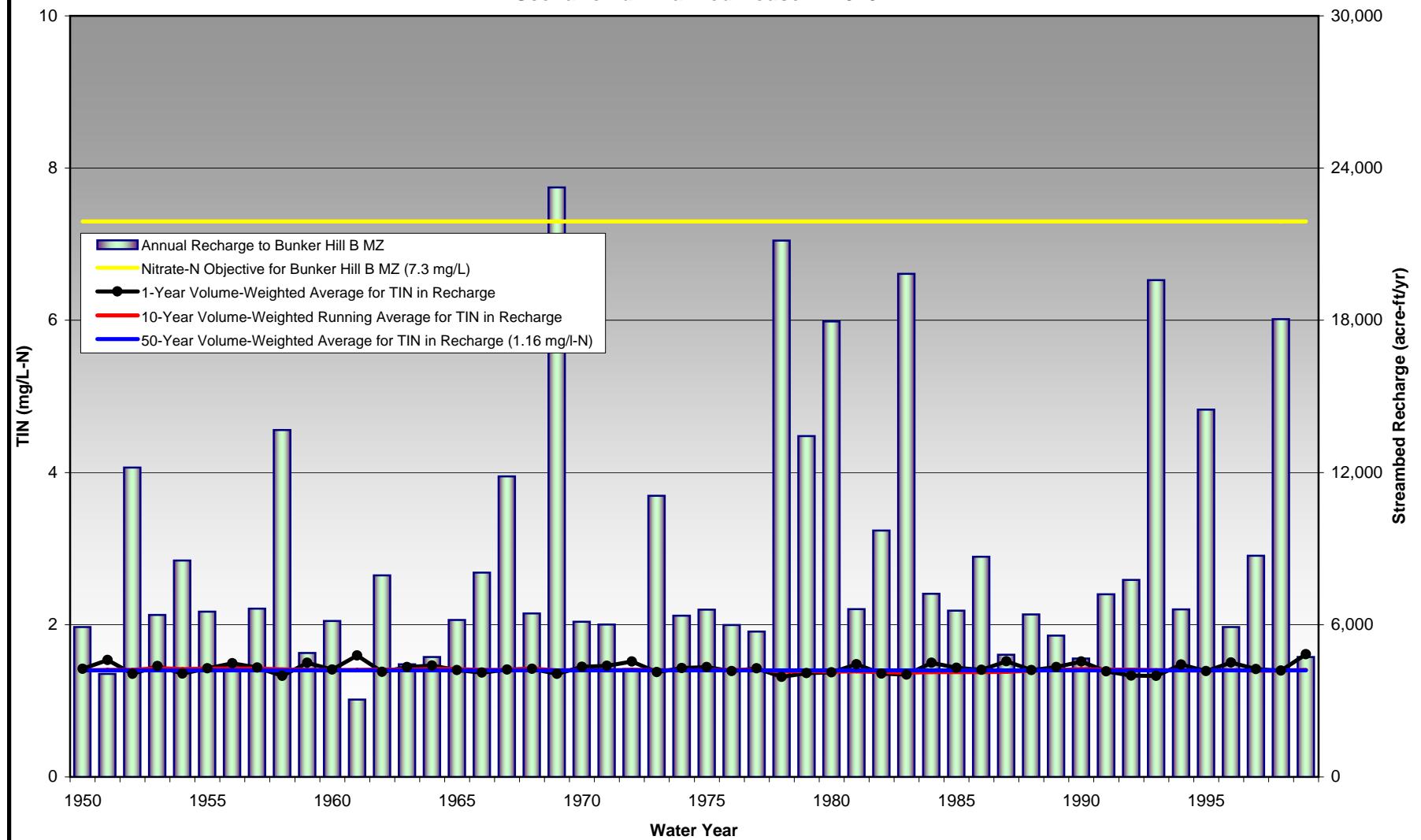


Table 7d-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 7d - Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	388	365	378	3.32	3.12	3.23
1951	470	372	378	4.03	3.18	3.23
1952	328	368	378	2.80	3.14	3.23
1953	413	388	378	3.52	3.31	3.23
1954	357	381	378	3.06	3.25	3.23
1955	408	390	378	3.48	3.33	3.23
1956	434	389	378	3.73	3.33	3.23
1957	412	394	378	3.51	3.36	3.23
1958	310	391	378	2.63	3.34	3.23
1959	444	388	378	3.81	3.31	3.23
1960	408	390	378	3.47	3.33	3.23
1961	479	390	378	4.12	3.33	3.23
1962	370	396	378	3.15	3.38	3.23
1963	438	398	378	3.76	3.40	3.23
1964	431	406	378	3.68	3.47	3.23
1965	395	405	378	3.37	3.46	3.23
1966	354	396	378	3.03	3.38	3.23
1967	340	388	378	2.92	3.32	3.23
1968	403	401	378	3.44	3.43	3.23
1969	286	381	378	2.44	3.25	3.23
1970	429	382	378	3.69	3.27	3.23
1971	431	379	378	3.69	3.24	3.23
1972	445	386	378	3.82	3.30	3.23
1973	343	376	378	2.90	3.22	3.23
1974	400	374	378	3.42	3.20	3.23
1975	401	374	378	3.41	3.20	3.23
1976	380	377	378	3.25	3.23	3.23
1977	414	385	378	3.53	3.29	3.23
1978	264	364	378	2.24	3.11	3.23
1979	329	371	378	2.79	3.16	3.23
1980	289	356	378	2.47	3.03	3.23
1981	436	356	378	3.73	3.04	3.23
1982	362	350	378	3.09	2.98	3.23
1983	287	343	378	2.43	2.92	3.23
1984	432	345	378	3.70	2.94	3.23
1985	412	345	378	3.52	2.94	3.23
1986	403	347	378	3.43	2.96	3.23
1987	466	350	378	4.00	2.98	3.23
1988	413	369	378	3.52	3.15	3.23
1989	445	380	378	3.81	3.25	3.23
1990	457	401	378	3.92	3.42	3.23
1991	373	395	378	3.20	3.37	3.23
1992	367	395	378	3.14	3.38	3.23
1993	270	392	378	2.31	3.35	3.23
1994	430	391	378	3.68	3.35	3.23
1995	326	382	378	2.79	3.27	3.23
1996	442	385	378	3.79	3.29	3.23
1997	371	377	378	3.16	3.23	3.23
1998	324	368	378	2.74	3.14	3.23
1999	496	370	378	4.26	3.17	3.23
Maximum	496	406		4.26	3.47	

San Timoteo Reach 3 defined here is equivalent to San Timoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 7d-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7d - Planned Reuse in 2020

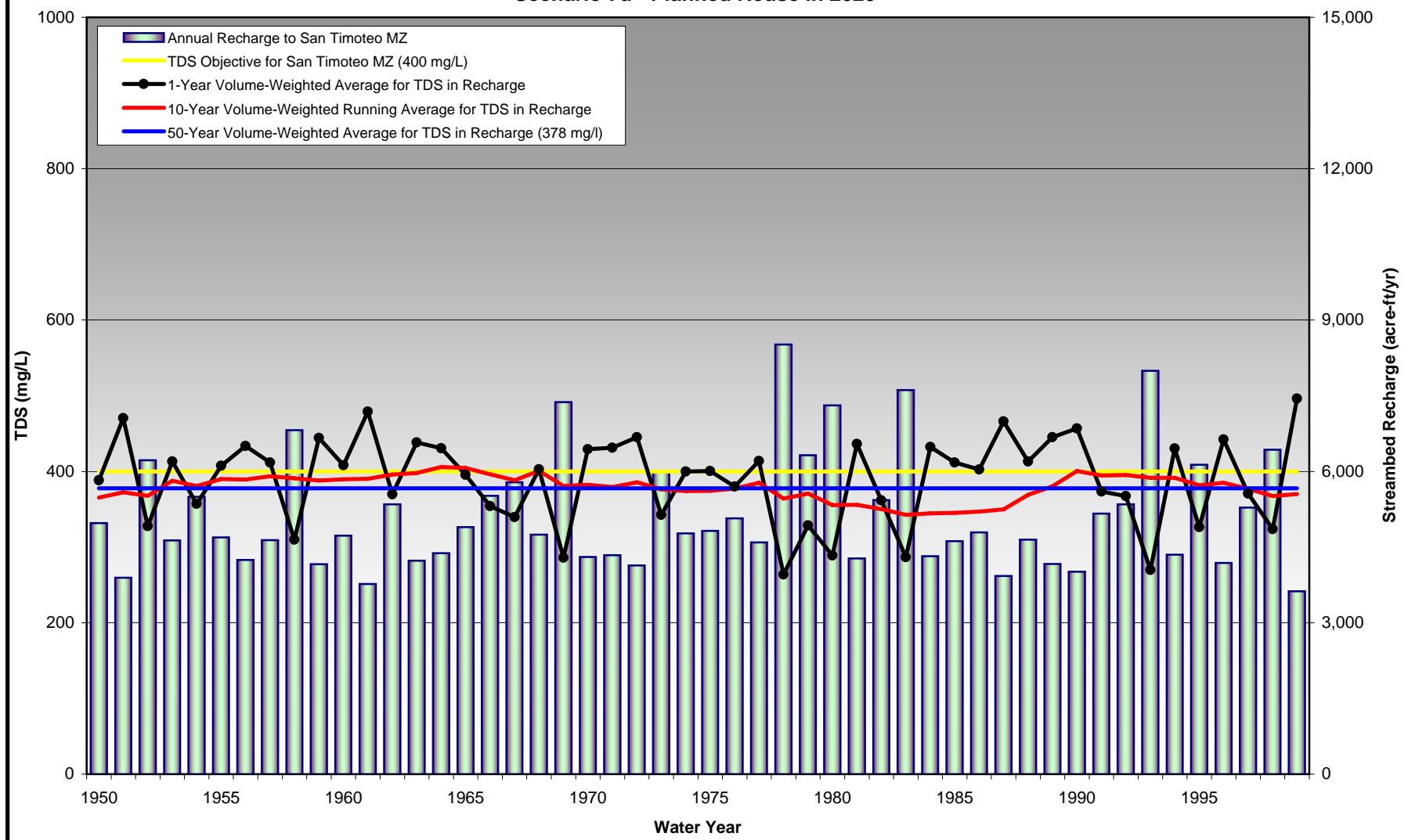


Figure 7d-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7d - Planned Reuse in 2020

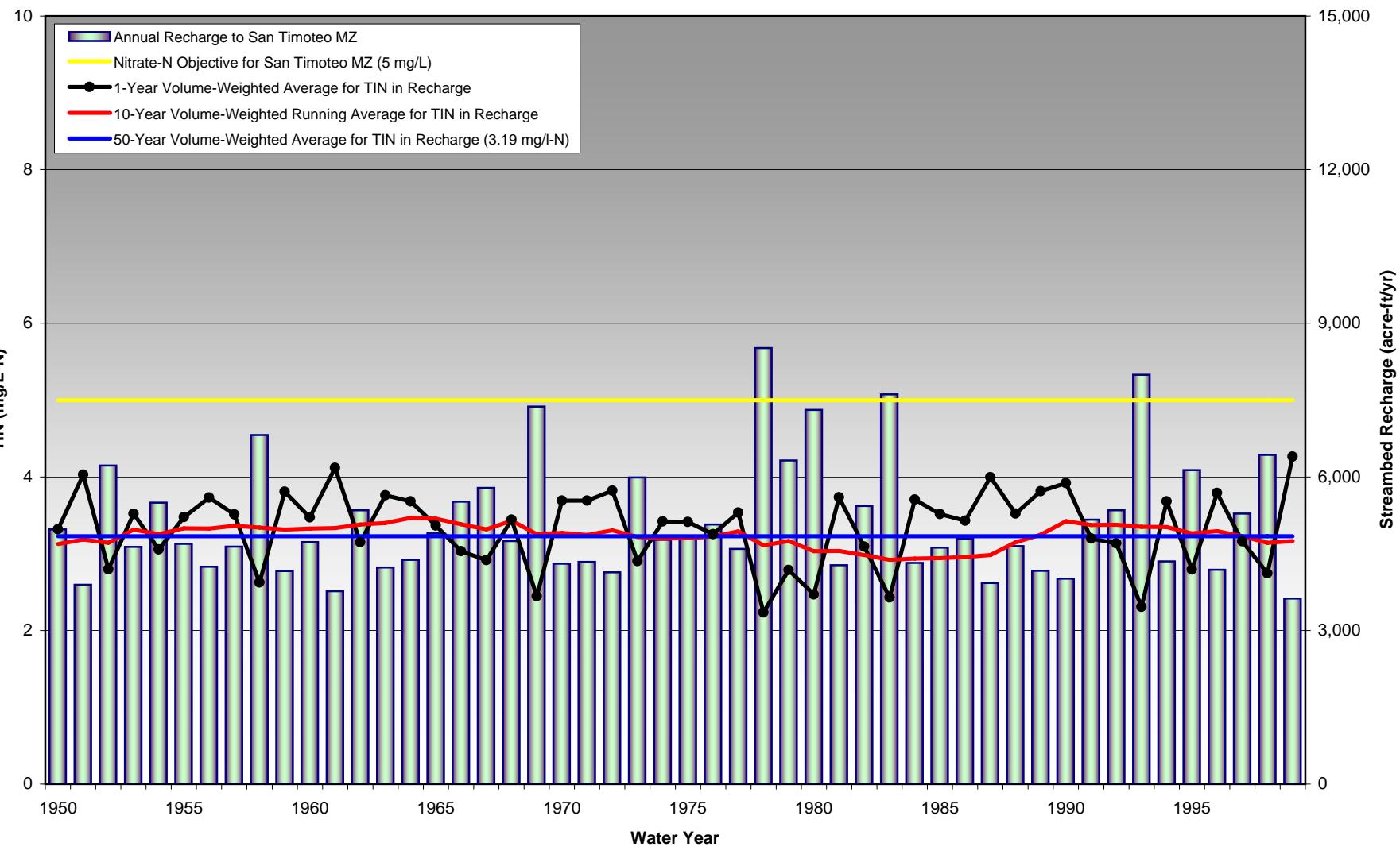


Table 7d-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 7d - Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	114	100	105	0.93	0.84	0.87
1951	154	101	105	1.17	0.85	0.87
1952	98	100	105	0.84	0.84	0.87
1953	138	104	105	1.09	0.87	0.87
1954	98	102	105	0.84	0.86	0.87
1955	125	108	105	1.01	0.90	0.87
1956	90	107	105	0.78	0.89	0.87
1957	121	108	105	0.98	0.90	0.87
1958	102	107	105	0.86	0.89	0.87
1959	127	107	105	1.01	0.89	0.87
1960	142	108	105	1.11	0.90	0.87
1961	148	107	105	1.14	0.89	0.87
1962	112	110	105	0.91	0.91	0.87
1963	119	109	105	0.96	0.90	0.87
1964	138	114	105	1.08	0.93	0.87
1965	116	113	105	0.93	0.92	0.87
1966	94	111	105	0.81	0.91	0.87
1967	92	107	105	0.80	0.89	0.87
1968	114	109	105	0.93	0.90	0.87
1969	89	102	105	0.77	0.86	0.87
1970	98	101	105	0.83	0.85	0.87
1971	119	101	105	0.95	0.85	0.87
1972	110	100	105	0.90	0.84	0.87
1973	120	101	105	0.97	0.85	0.87
1974	111	101	105	0.92	0.85	0.87
1975	125	101	105	1.00	0.85	0.87
1976	100	102	105	0.85	0.86	0.87
1977	121	105	105	0.99	0.88	0.87
1978	101	103	105	0.85	0.87	0.87
1979	110	109	105	0.91	0.90	0.87
1980	96	106	105	0.82	0.88	0.87
1981	138	107	105	1.09	0.89	0.87
1982	101	106	105	0.85	0.88	0.87
1983	102	104	105	0.85	0.87	0.87
1984	115	104	105	0.93	0.87	0.87
1985	116	104	105	0.94	0.87	0.87
1986	117	105	105	0.95	0.87	0.87
1987	147	105	105	1.14	0.87	0.87
1988	140	107	105	1.10	0.89	0.87
1989	142	107	105	1.11	0.89	0.87
1990	123	112	105	0.98	0.92	0.87
1991	98	109	105	0.83	0.90	0.87
1992	110	110	105	0.90	0.91	0.87
1993	91	105	105	0.79	0.88	0.87
1994	126	106	105	1.01	0.88	0.87
1995	87	101	105	0.75	0.85	0.87
1996	102	100	105	0.84	0.84	0.87
1997	106	100	105	0.88	0.84	0.87
1998	109	100	105	0.90	0.84	0.87
1999	163	99	105	1.20	0.84	0.87
Maximum	163	114		1.20	0.93	

Figure 7d-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7d - Planned Reuse in 2020

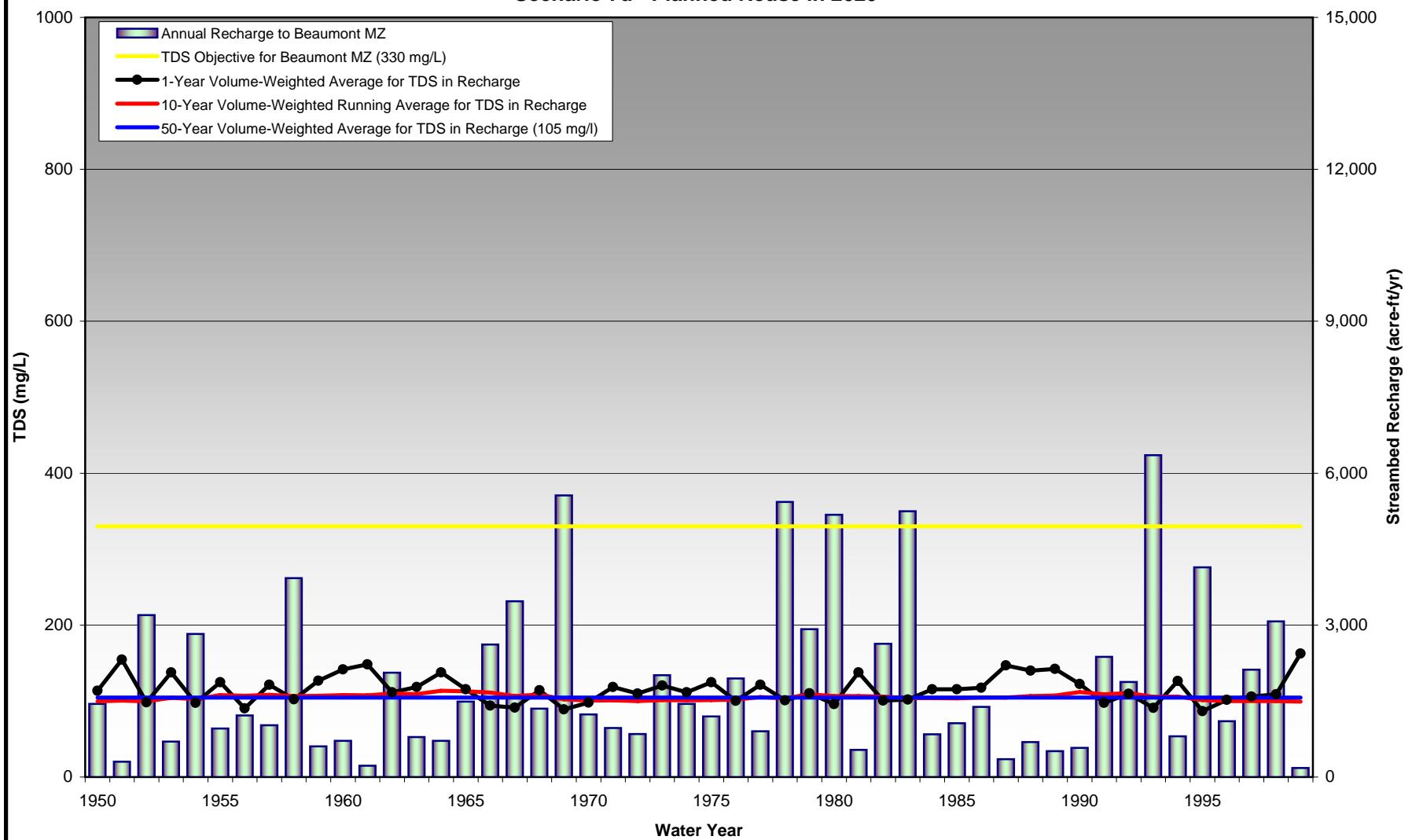


Figure 7d-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7d - Planned Reuse in 2020

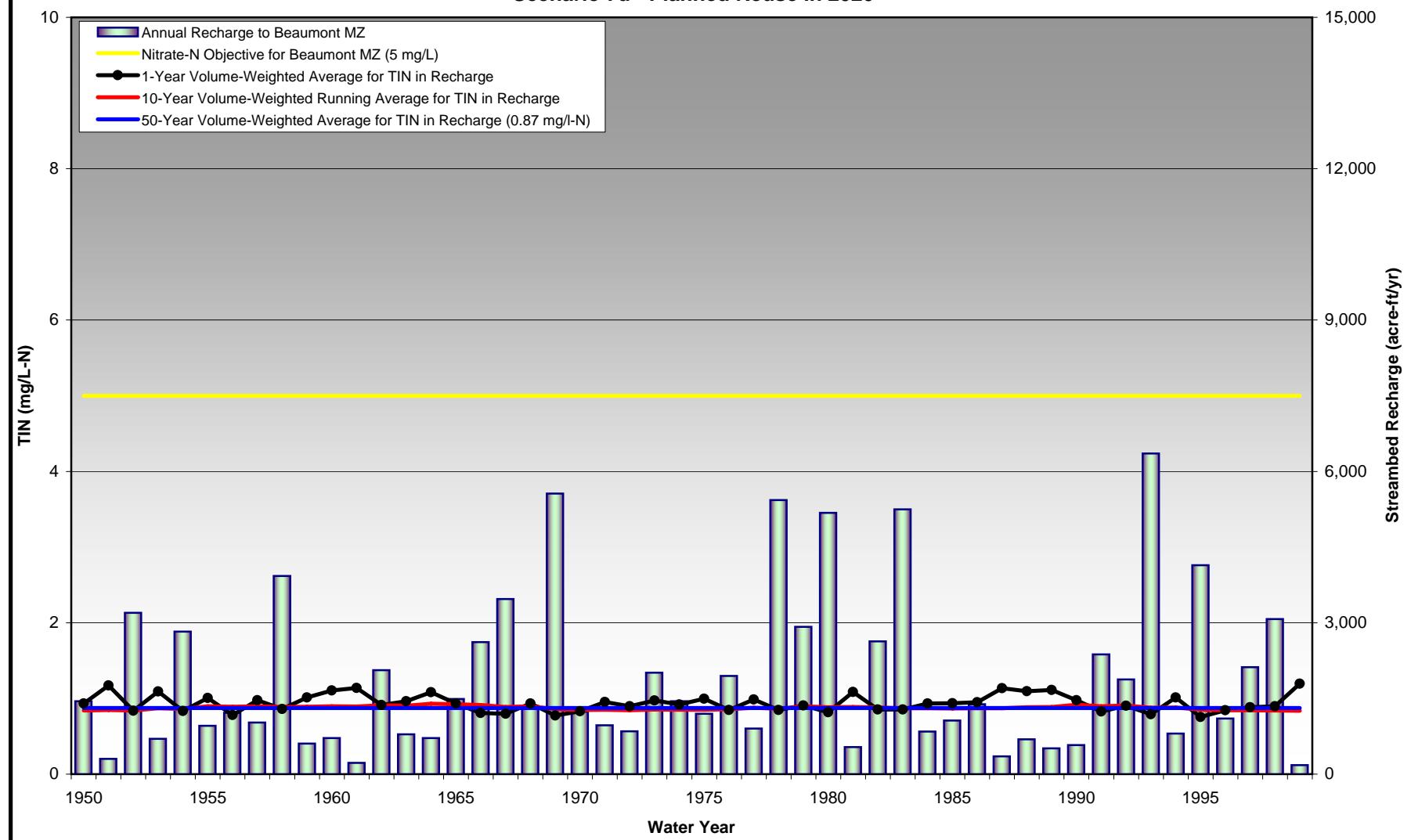


Table 7e-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 7e - Partial Planned Reuse in 2020

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only
1950	544	510	489	433	462	628	6.63	6.21	5.96	5.14	5.55	7.67
1951	605	527	502	443	462	628	7.40	6.43	6.11	5.26	5.55	7.67
1952	374	502	468	433	462	628	4.54	6.11	5.69	5.15	5.55	7.67
1953	577	543	519	475	462	628	7.04	6.63	6.33	5.74	5.55	7.67
1954	476	515	495	468	462	628	5.80	6.28	6.04	5.65	5.55	7.66
1955	553	517	497	493	462	627	6.75	6.31	6.05	6.00	5.55	7.66
1956	452	486	471	486	462	628	5.55	5.94	5.75	5.93	5.55	7.67
1957	561	524	518	491	462	628	6.84	6.40	6.33	5.99	5.55	7.67
1958	402	489	479	498	462	613	4.84	5.96	5.83	6.07	5.55	7.48
1959	601	514	499	497	462	628	7.36	6.27	6.08	6.06	5.55	7.67
1960	575	518	502	499	462	628	7.01	6.32	6.12	6.09	5.55	7.67
1961	623	553	534	500	462	619	7.64	6.74	6.50	6.10	5.55	7.54
1962	483	537	518	518	462	628	5.88	6.55	6.30	6.32	5.55	7.67
1963	529	562	556	514	462	628	6.47	6.87	6.80	6.27	5.55	7.66
1964	574	557	552	523	462	628	7.01	6.80	6.74	6.39	5.55	7.67
1965	534	549	544	522	462	622	6.50	6.70	6.64	6.36	5.55	7.59
1966	413	507	499	515	462	628	5.00	6.17	6.07	6.28	5.55	7.67
1967	374	485	468	491	462	621	4.50	5.90	5.68	5.97	5.55	7.58
1968	514	482	465	506	462	628	6.29	5.86	5.65	6.16	5.55	7.67
1969	264	420	381	446	462	617	3.07	5.07	4.57	5.40	5.55	7.52
1970	543	421	381	444	462	628	6.62	5.10	4.58	5.37	5.55	7.66
1971	553	449	398	440	462	627	6.75	5.45	4.78	5.33	5.55	7.66
1972	546	484	425	445	462	616	6.68	5.88	5.12	5.38	5.55	7.51
1973	472	475	419	441	462	628	5.70	5.76	5.05	5.33	5.55	7.67
1974	501	523	520	436	462	628	6.11	6.37	6.34	5.28	5.55	7.67
1975	551	525	522	437	462	629	6.72	6.39	6.36	5.29	5.55	7.68
1976	551	524	521	449	462	628	6.71	6.39	6.35	5.43	5.55	7.67
1977	548	525	522	467	462	402	6.69	6.39	6.35	5.66	5.55	4.82
1978	309	492	455	436	462	628	3.65	5.98	5.51	5.27	5.55	7.67
1979	449	482	446	479	462	628	5.37	5.83	5.38	5.81	5.55	7.67
1980	321	436	394	444	462	627	3.30	5.14	4.56	5.26	5.55	7.65
1981	578	441	395	445	462	629	7.06	5.21	4.58	5.28	5.55	7.68
1982	438	419	384	437	462	628	5.32	4.94	4.45	5.18	5.55	7.67
1983	360	429	400	424	462	481	4.06	5.02	4.58	4.98	5.55	5.79
1984	545	448	410	426	462	627	6.65	5.28	4.71	5.01	5.55	7.65
1985	535	491	467	426	462	628	6.52	5.92	5.59	5.00	5.55	7.68
1986	493	474	456	422	462	628	5.99	5.71	5.45	4.97	5.55	7.67
1987	593	505	480	424	462	628	7.25	6.09	5.75	4.99	5.55	7.67
1988	531	539	537	452	462	628	6.47	6.58	6.54	5.33	5.55	7.67
1989	576	545	542	462	462	628	7.02	6.65	6.61	5.45	5.55	7.67
1990	581	555	551	504	462	628	7.11	6.77	6.73	6.09	5.55	7.67
1991	446	545	538	492	462	628	5.42	6.66	6.56	5.94	5.55	7.67
1992	463	519	511	495	462	629	5.62	6.33	6.23	5.98	5.55	7.68
1993	297	473	426	472	462	628	3.19	5.67	5.02	5.65	5.55	7.67
1994	574	472	426	474	462	629	7.00	5.67	5.02	5.68	5.55	7.68
1995	360	428	393	453	462	628	4.12	5.07	4.57	5.38	5.55	7.67
1996	517	442	401	454	462	629	6.33	5.25	4.67	5.41	5.55	7.68
1997	504	450	406	449	462	628	6.11	5.35	4.72	5.34	5.55	7.67
1998	367	464	440	433	462	619	4.43	5.60	5.28	5.14	5.55	7.56
1999	617	473	444	435	462	628	7.56	5.71	5.33	5.17	5.55	7.67
Maximum	623	562	556	523	462	629	7.64	6.87	6.80	6.39	5.55	7.68

Figure 7e-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7e - Partial Planned Reuse in 2020

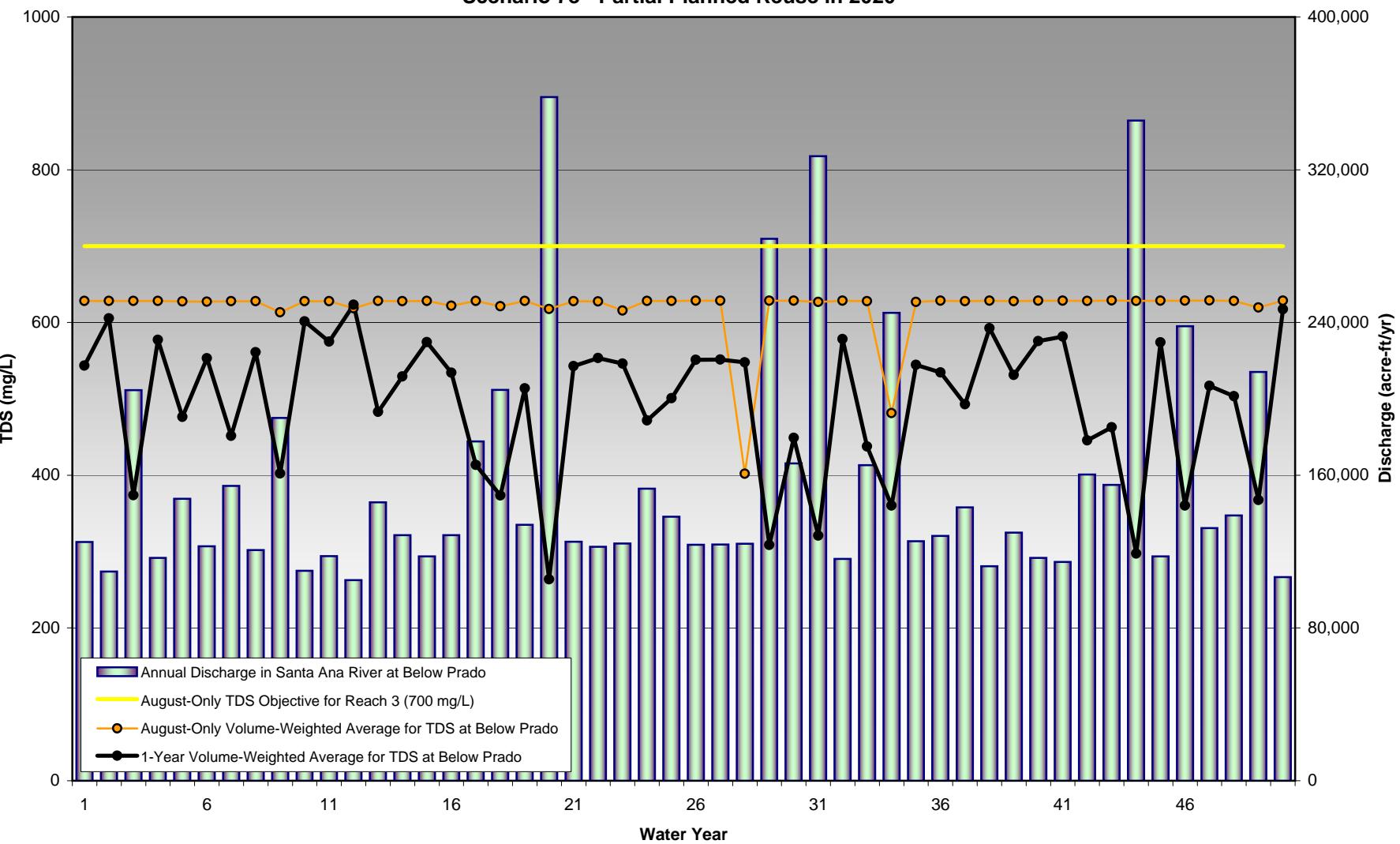


Figure 7e-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7e - Partial Planned Reuse in 2020

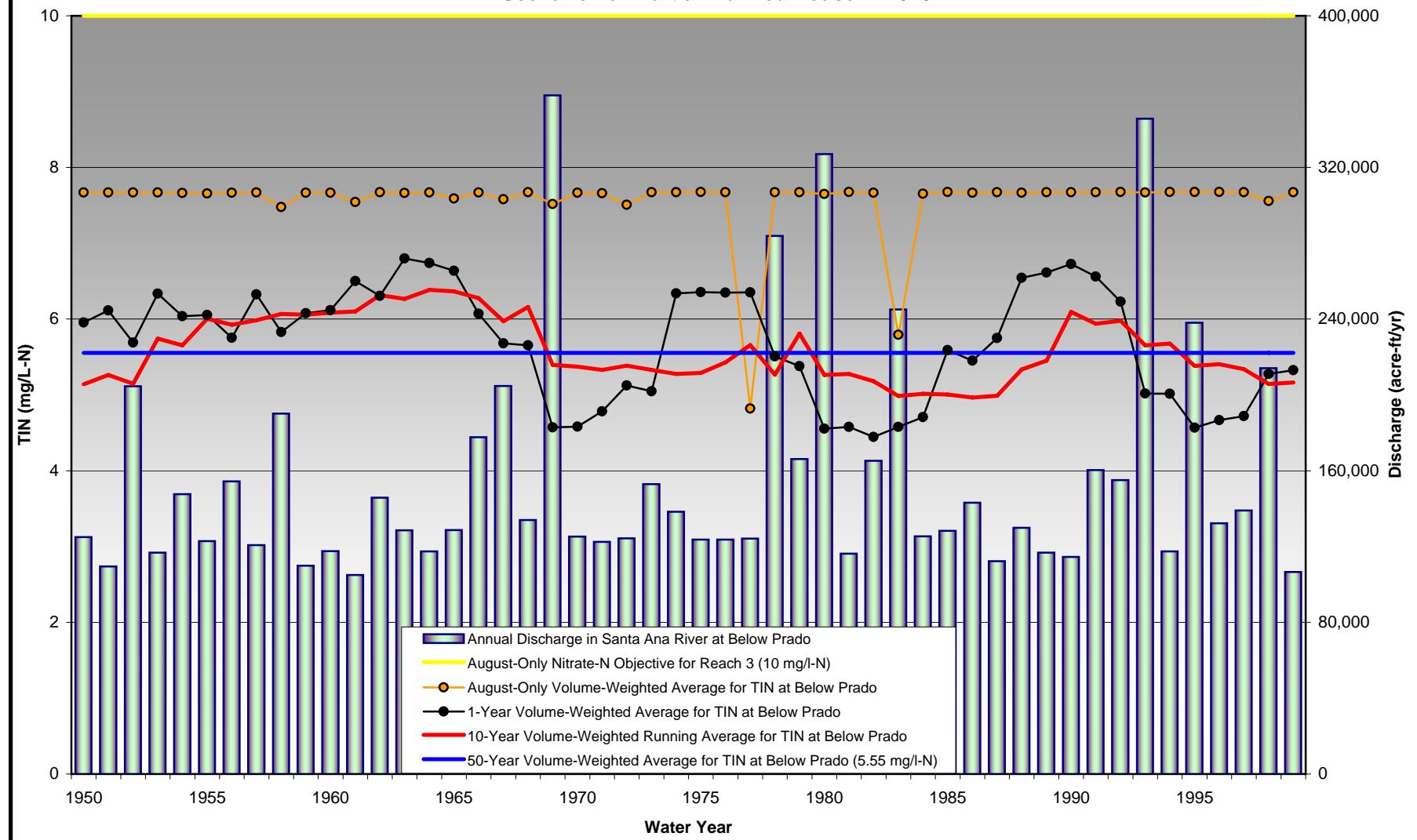


Figure 7e-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 7e - Partial Planned Reuse in 2020

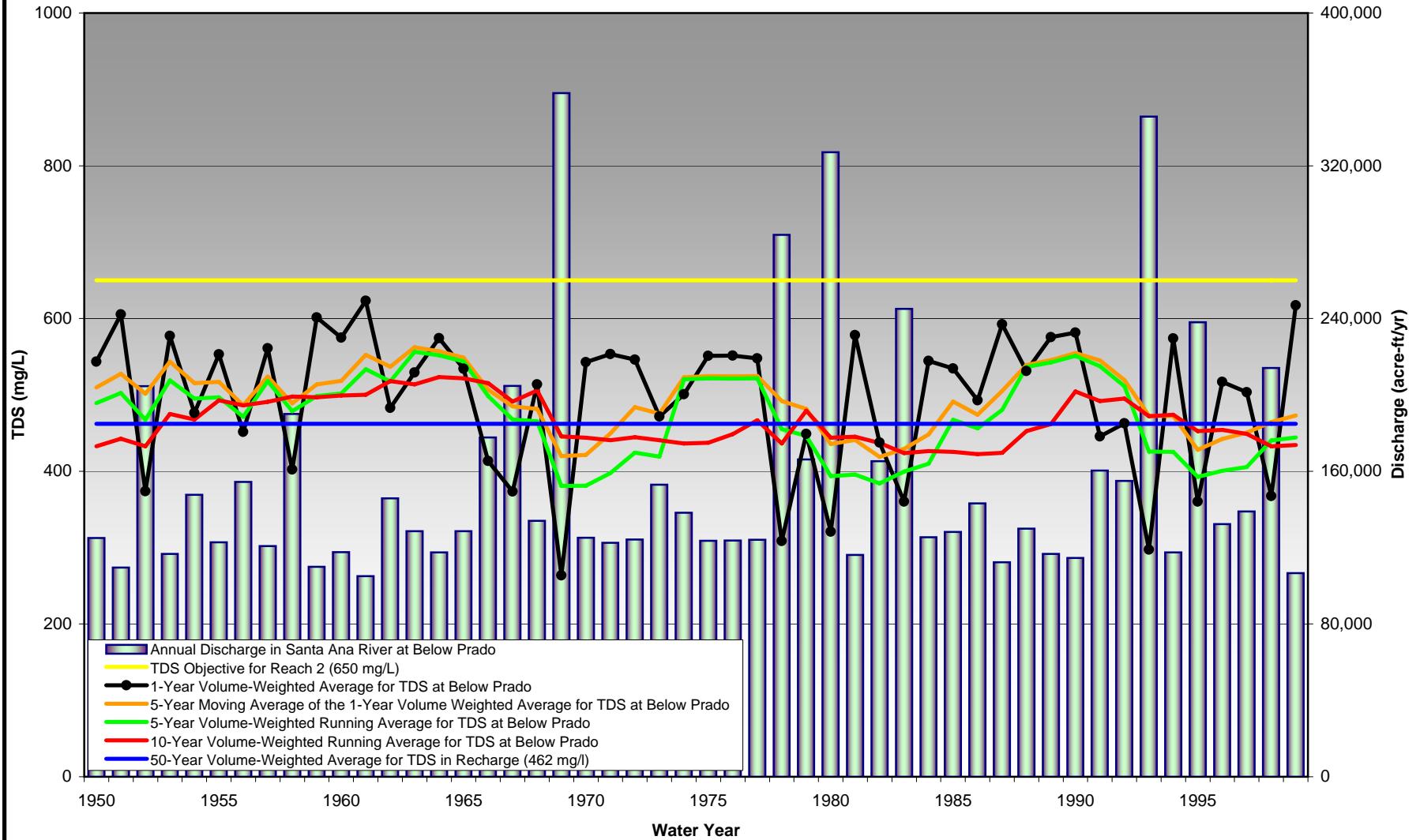


Table 7e-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 7e - Partial Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	599	554	572	4.22	3.87	4.00
1951	618	559	572	4.36	3.90	4.00
1952	527	555	572	3.69	3.87	4.00
1953	609	574	572	4.30	4.03	4.00
1954	573	571	572	4.03	4.01	4.00
1955	599	582	572	4.22	4.09	4.00
1956	587	580	572	4.14	4.08	4.00
1957	606	583	572	4.27	4.10	4.00
1958	532	585	572	3.71	4.12	4.00
1959	621	585	572	4.39	4.12	4.00
1960	613	587	572	4.32	4.13	4.00
1961	626	587	572	4.42	4.14	4.00
1962	578	593	572	4.06	4.18	4.00
1963	595	592	572	4.20	4.17	4.00
1964	611	596	572	4.31	4.20	4.00
1965	596	595	572	4.19	4.19	4.00
1966	552	591	572	3.87	4.16	4.00
1967	532	583	572	3.72	4.10	4.00
1968	595	590	572	4.19	4.16	4.00
1969	453	570	572	3.09	4.00	4.00
1970	602	569	572	4.25	3.99	4.00
1971	603	567	572	4.25	3.98	4.00
1972	606	570	572	4.27	4.00	4.00
1973	575	568	572	4.04	3.98	4.00
1974	587	566	572	4.13	3.97	4.00
1975	606	567	572	4.27	3.97	4.00
1976	596	571	572	4.20	4.01	4.00
1977	608	579	572	4.29	4.07	4.00
1978	470	564	572	3.22	3.95	4.00
1979	557	578	572	3.88	4.06	4.00
1980	471	562	572	3.14	3.92	4.00
1981	614	563	572	4.34	3.93	4.00
1982	555	559	572	3.90	3.90	4.00
1983	498	551	572	3.37	3.83	4.00
1984	598	552	572	4.22	3.83	4.00
1985	597	551	572	4.21	3.83	4.00
1986	587	550	572	4.13	3.82	4.00
1987	619	551	572	4.37	3.83	4.00
1988	601	565	572	4.24	3.94	4.00
1989	612	570	572	4.32	3.98	4.00
1990	609	587	572	4.30	4.12	4.00
1991	568	582	572	3.99	4.09	4.00
1992	567	584	572	3.98	4.10	4.00
1993	443	575	572	2.96	4.03	4.00
1994	607	576	572	4.28	4.03	4.00
1995	505	566	572	3.45	3.95	4.00
1996	601	567	572	4.24	3.96	4.00
1997	579	564	572	4.07	3.94	4.00
1998	511	554	572	3.56	3.87	4.00
1999	623	555	572	4.40	3.87	4.00
Maximum	626	596		4.42	4.20	

Figure 7e-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7e - Partial Planned Reuse in 2020

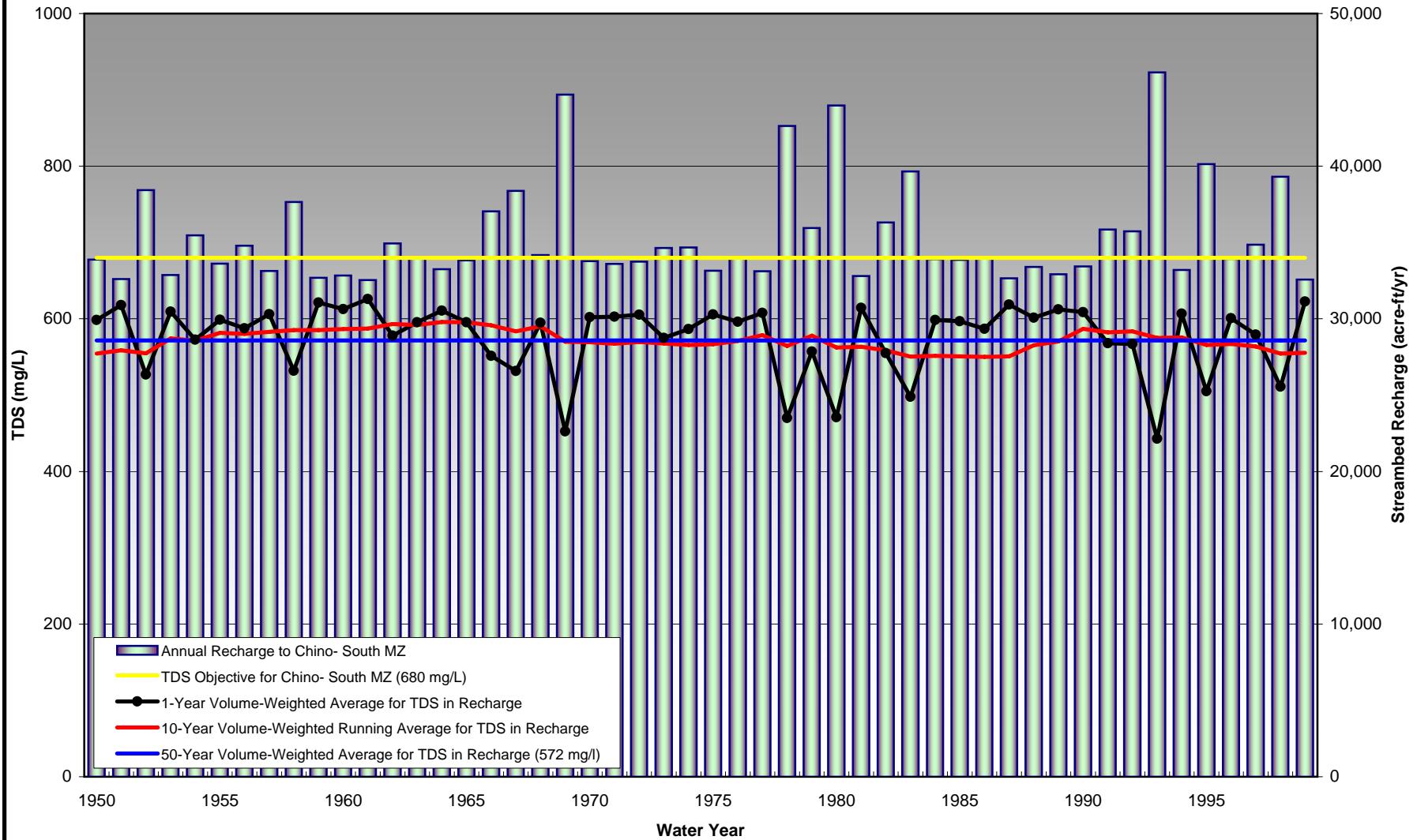


Figure 7e-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7e - Partial Planned Reuse in 2020

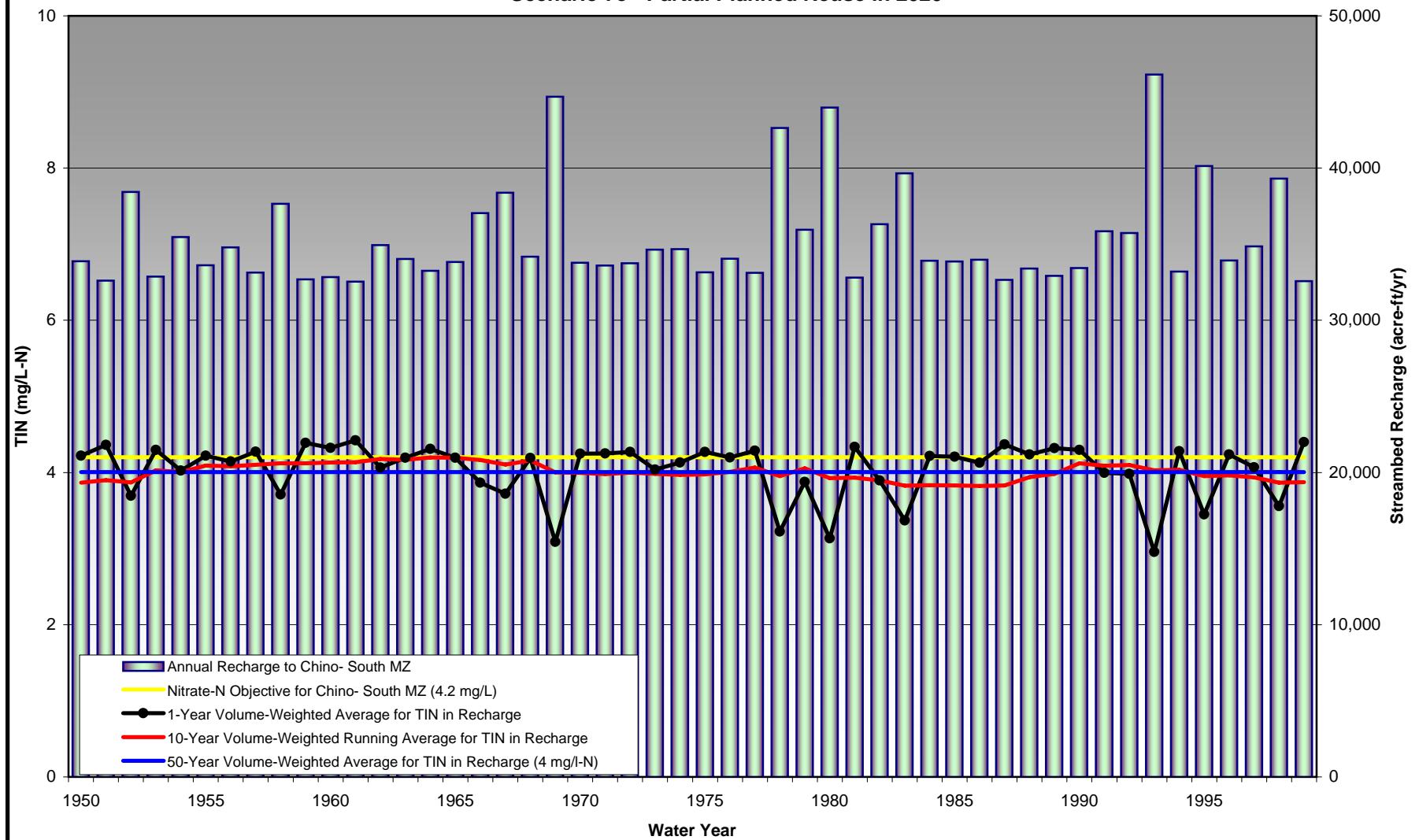


Table 7e-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 7e - Partial Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	457	393	420	6.16	5.13	5.56
1951	518	399	420	7.08	5.23	5.56
1952	364	396	420	4.78	5.17	5.56
1953	494	427	420	6.70	5.67	5.56
1954	419	421	420	5.58	5.59	5.56
1955	470	436	420	6.35	5.83	5.56
1956	465	437	420	6.32	5.84	5.56
1957	489	443	420	6.64	5.95	5.56
1958	359	446	420	4.61	5.99	5.56
1959	507	445	420	6.92	5.97	5.56
1960	504	448	420	6.86	6.03	5.56
1961	526	449	420	7.22	6.04	5.56
1962	425	458	420	5.68	6.17	5.56
1963	474	456	420	6.43	6.14	5.56
1964	488	464	420	6.63	6.25	5.56
1965	452	462	420	6.07	6.23	5.56
1966	391	453	420	5.14	6.08	5.56
1967	370	439	420	4.82	5.88	5.56
1968	459	452	420	6.20	6.08	5.56
1969	288	419	420	3.42	5.55	5.56
1970	461	416	420	6.23	5.51	5.56
1971	461	412	420	6.21	5.44	5.56
1972	485	417	420	6.59	5.51	5.56
1973	423	413	420	5.60	5.45	5.56
1974	446	410	420	6.00	5.40	5.56
1975	485	412	420	6.58	5.44	5.56
1976	451	418	420	6.07	5.53	5.56
1977	486	429	420	6.60	5.70	5.56
1978	303	407	420	3.68	5.35	5.56
1979	409	429	420	5.40	5.71	5.56
1980	300	405	420	3.62	5.32	5.56
1981	504	408	420	6.86	5.36	5.56
1982	394	401	420	5.22	5.25	5.56
1983	323	389	420	4.06	5.06	5.56
1984	465	390	420	6.27	5.08	5.56
1985	472	389	420	6.39	5.07	5.56
1986	452	389	420	6.07	5.07	5.56
1987	514	391	420	7.03	5.09	5.56
1988	475	411	420	6.43	5.42	5.56
1989	484	417	420	6.56	5.52	5.56
1990	488	446	420	6.64	5.98	5.56
1991	413	438	420	5.50	5.85	5.56
1992	400	438	420	5.28	5.86	5.56
1993	278	424	420	3.28	5.62	5.56
1994	482	425	420	6.53	5.64	5.56
1995	343	411	420	4.35	5.41	5.56
1996	461	412	420	6.21	5.42	5.56
1997	419	405	420	5.54	5.32	5.56
1998	346	392	420	4.39	5.12	5.56
1999	524	395	420	7.17	5.15	5.56
Maximum	526	464		7.22	6.25	

Figure 7e-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7e - Partial Planned Reuse in 2020

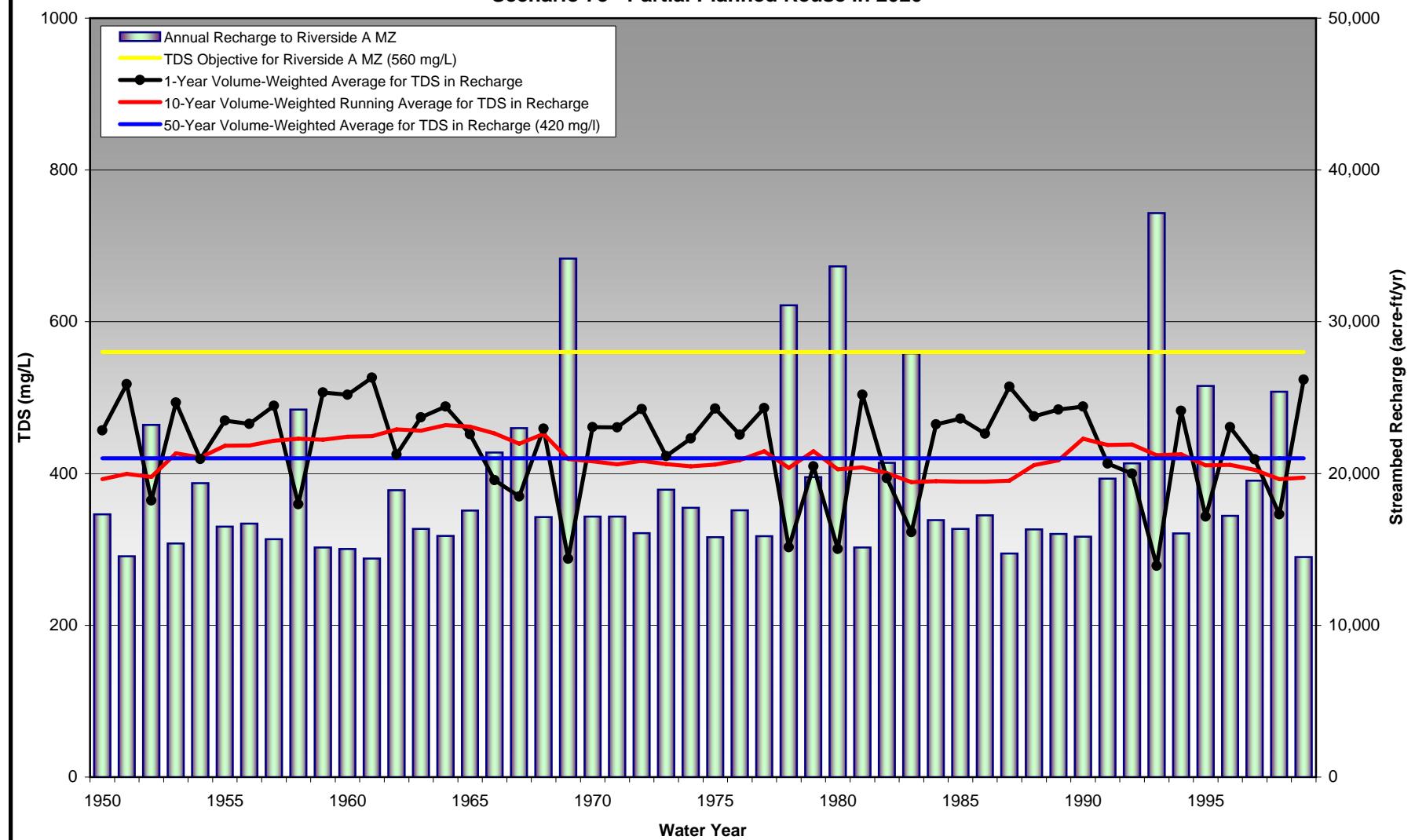


Figure 7e-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7e - Partial Planned Reuse in 2020

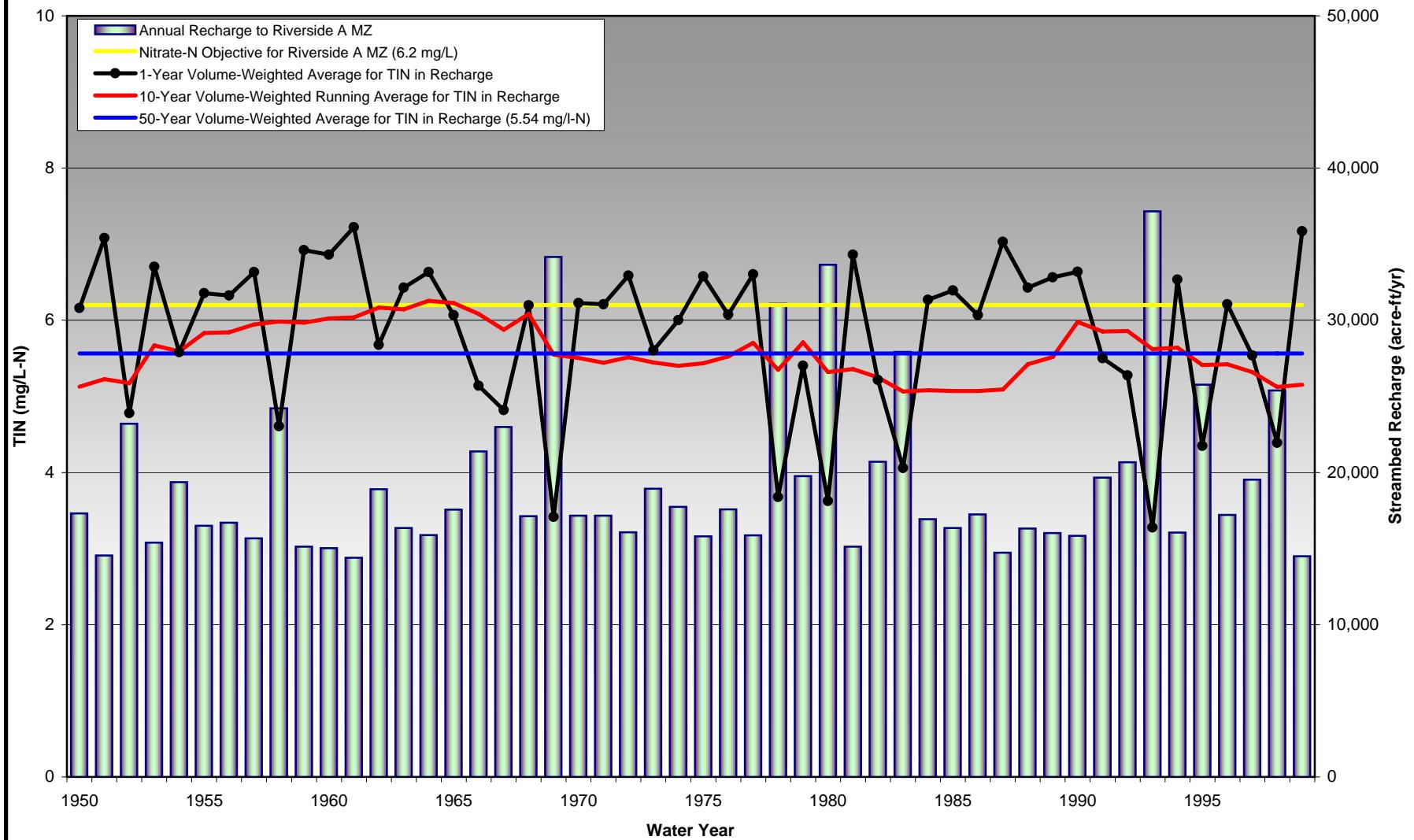


Table 7e-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 7e - Partial Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	140	153	151	1.13	1.17	1.17
1951	163	154	151	1.22	1.18	1.17
1952	138	154	151	1.12	1.18	1.17
1953	158	153	151	1.21	1.18	1.17
1954	142	152	151	1.13	1.17	1.17
1955	146	151	151	1.16	1.18	1.17
1956	126	149	151	1.04	1.17	1.17
1957	158	149	151	1.21	1.17	1.17
1958	151	146	151	1.17	1.15	1.17
1959	164	146	151	1.25	1.15	1.17
1960	154	147	151	1.19	1.15	1.17
1961	159	147	151	1.21	1.15	1.17
1962	145	148	151	1.14	1.16	1.17
1963	135	147	151	1.09	1.15	1.17
1964	151	148	151	1.18	1.16	1.17
1965	147	148	151	1.14	1.15	1.17
1966	139	148	151	1.11	1.16	1.17
1967	145	147	151	1.13	1.15	1.17
1968	141	145	151	1.11	1.14	1.17
1969	160	150	151	1.20	1.16	1.17
1970	139	150	151	1.12	1.16	1.17
1971	146	149	151	1.16	1.16	1.17
1972	149	150	151	1.17	1.16	1.17
1973	154	151	151	1.20	1.16	1.17
1974	138	150	151	1.11	1.16	1.17
1975	160	150	151	1.21	1.16	1.17
1976	136	151	151	1.08	1.16	1.17
1977	147	152	151	1.14	1.17	1.17
1978	156	154	151	1.18	1.18	1.17
1979	152	151	151	1.17	1.16	1.17
1980	156	153	151	1.19	1.17	1.17
1981	167	153	151	1.25	1.18	1.17
1982	130	152	151	1.06	1.17	1.17
1983	154	152	151	1.20	1.17	1.17
1984	159	153	151	1.21	1.17	1.17
1985	147	152	151	1.13	1.17	1.17
1986	156	153	151	1.20	1.18	1.17
1987	165	154	151	1.23	1.18	1.17
1988	151	153	151	1.16	1.18	1.17
1989	158	153	151	1.21	1.18	1.17
1990	153	152	151	1.17	1.18	1.17
1991	137	149	151	1.11	1.16	1.17
1992	136	150	151	1.09	1.17	1.17
1993	156	151	151	1.17	1.16	1.17
1994	160	151	151	1.22	1.16	1.17
1995	152	152	151	1.16	1.16	1.17
1996	156	152	151	1.19	1.16	1.17
1997	151	152	151	1.17	1.16	1.17
1998	159	153	151	1.22	1.17	1.17
1999	180	153	151	1.33	1.17	1.17
Maximum	180	154		1.33	1.18	

Figure 7e-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7e - Partial Planned Reuse in 2020

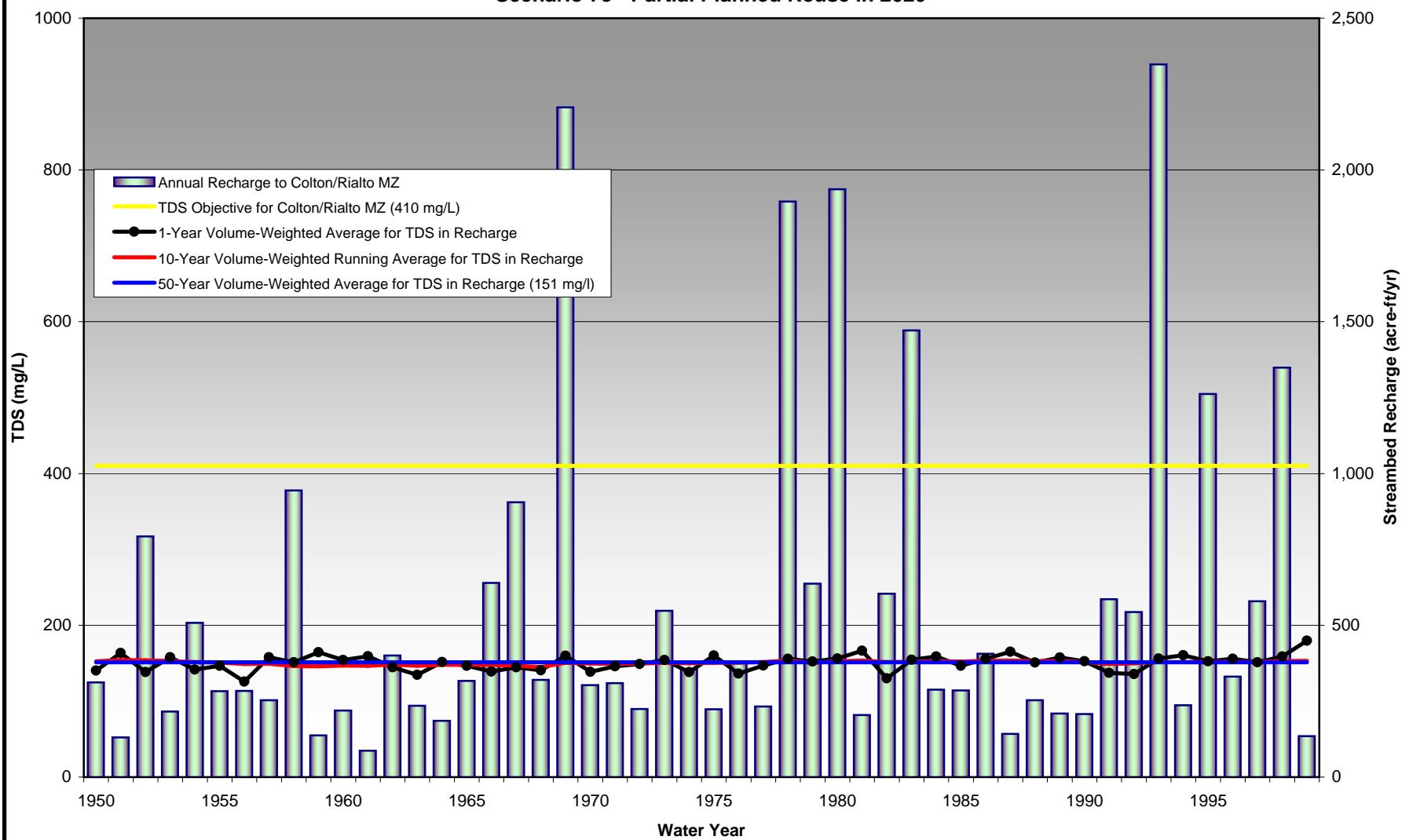


Figure 7e-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7e - Partial Planned Reuse in 2020

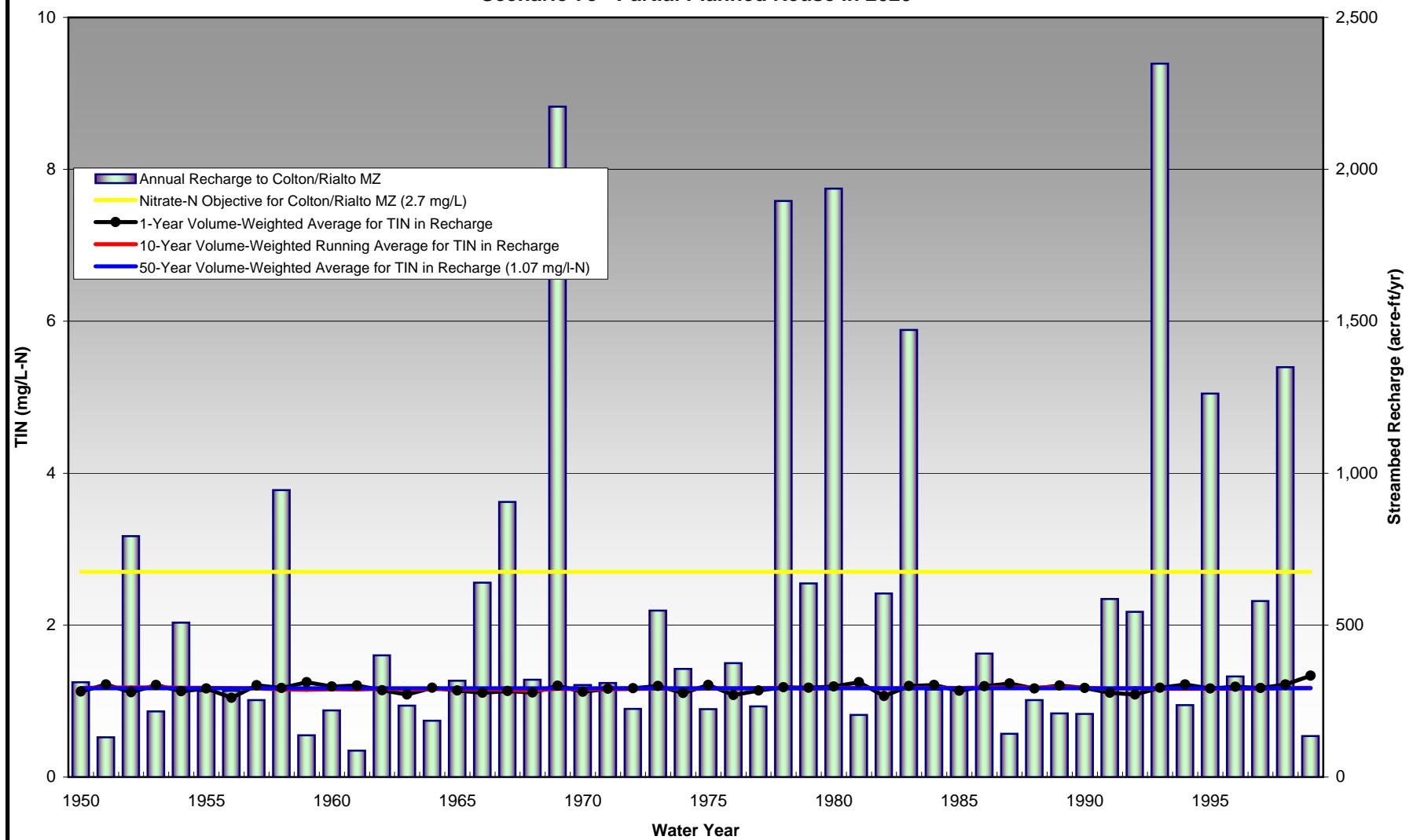


Table 7e-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 7e - Partial Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	197	193	193	1.49	1.44	1.45
1951	216	195	193	1.63	1.45	1.45
1952	184	194	193	1.39	1.45	1.45
1953	202	197	193	1.52	1.47	1.45
1954	185	196	193	1.41	1.46	1.45
1955	197	196	193	1.49	1.47	1.45
1956	208	196	193	1.58	1.47	1.45
1957	199	197	193	1.50	1.48	1.45
1958	180	195	193	1.36	1.47	1.45
1959	211	194	193	1.58	1.46	1.45
1960	195	194	193	1.48	1.46	1.45
1961	227	194	193	1.71	1.46	1.45
1962	190	195	193	1.43	1.47	1.45
1963	202	195	193	1.53	1.47	1.45
1964	204	197	193	1.54	1.49	1.45
1965	194	197	193	1.47	1.48	1.45
1966	188	195	193	1.42	1.47	1.45
1967	193	194	193	1.44	1.46	1.45
1968	197	197	193	1.48	1.49	1.45
1969	188	194	193	1.37	1.45	1.45
1970	199	194	193	1.51	1.45	1.45
1971	202	193	193	1.52	1.45	1.45
1972	213	195	193	1.60	1.46	1.45
1973	188	194	193	1.42	1.45	1.45
1974	197	193	193	1.49	1.45	1.45
1975	201	194	193	1.50	1.45	1.45
1976	192	194	193	1.46	1.45	1.45
1977	198	195	193	1.49	1.46	1.45
1978	181	192	193	1.33	1.43	1.45
1979	186	192	193	1.40	1.44	1.45
1980	188	190	193	1.40	1.43	1.45
1981	206	191	193	1.54	1.43	1.45
1982	184	189	193	1.40	1.42	1.45
1983	183	188	193	1.37	1.41	1.45
1984	209	189	193	1.55	1.41	1.45
1985	199	189	193	1.50	1.41	1.45
1986	194	189	193	1.46	1.41	1.45
1987	214	190	193	1.60	1.42	1.45
1988	195	192	193	1.47	1.44	1.45
1989	201	193	193	1.51	1.45	1.45
1990	213	196	193	1.60	1.47	1.45
1991	190	194	193	1.44	1.46	1.45
1992	182	194	193	1.39	1.46	1.45
1993	183	194	193	1.35	1.46	1.45
1994	206	194	193	1.54	1.45	1.45
1995	192	193	193	1.42	1.44	1.45
1996	210	194	193	1.56	1.45	1.45
1997	195	193	193	1.46	1.45	1.45
1998	192	193	193	1.42	1.44	1.45
1999	227	194	193	1.69	1.45	1.45
Maximum	227	197		1.71	1.49	

Figure 7e-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7e - Partial Planned Reuse in 2020

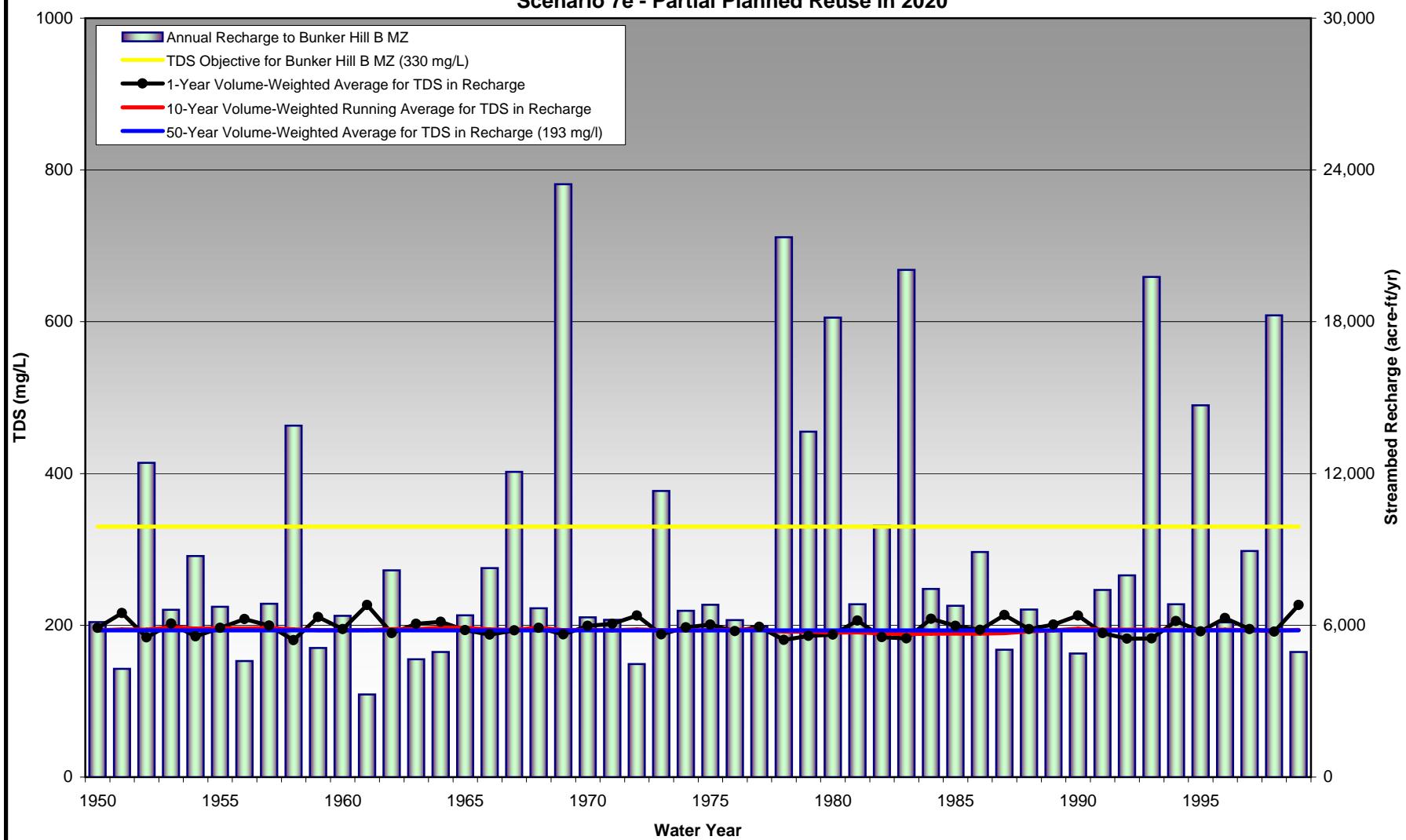


Figure 7e-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7e - Partial Planned Reuse in 2020

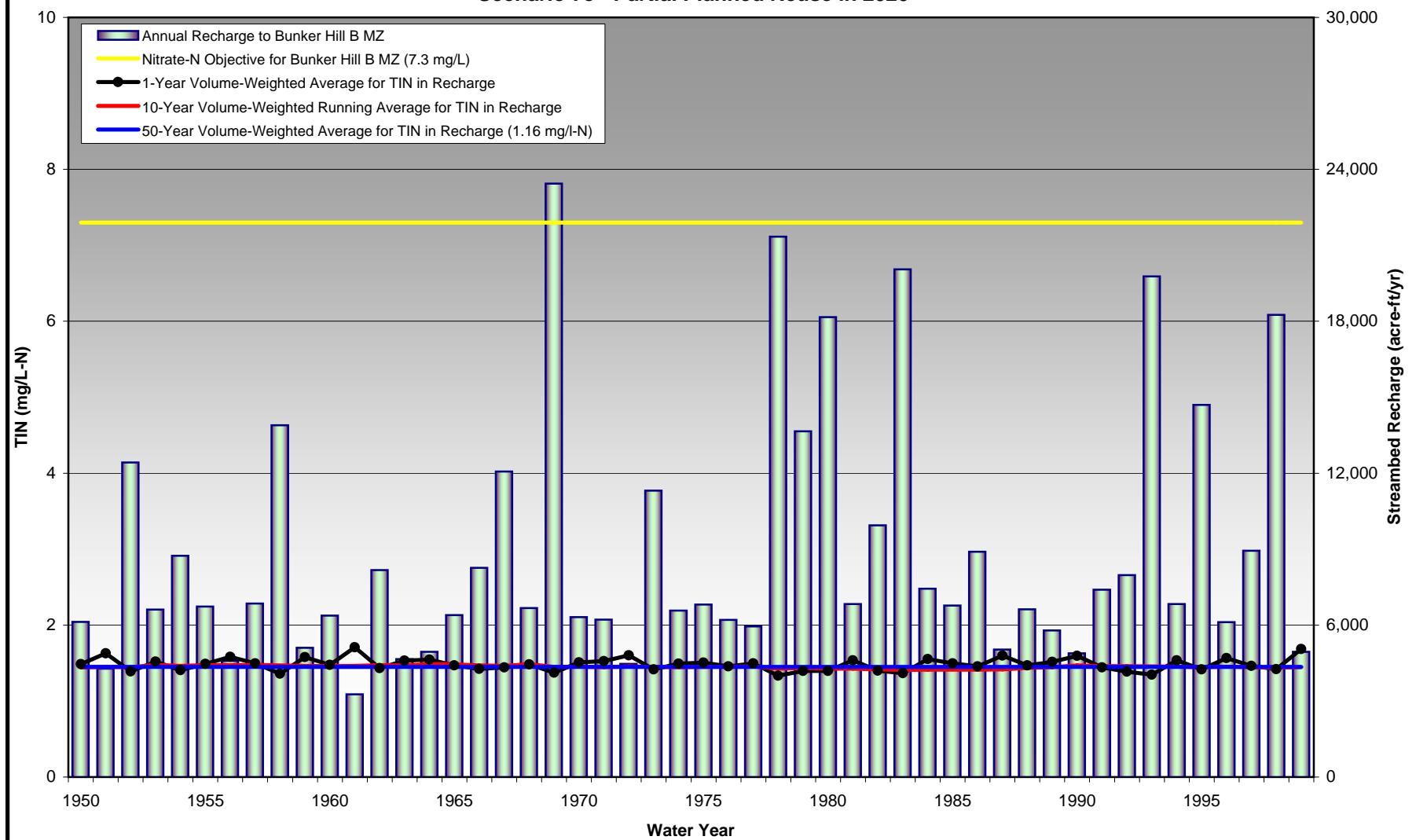


Table 7e-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 7e - Partial Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	396	375	387	3.24	3.08	3.17
1951	468	382	387	3.83	3.13	3.17
1952	340	378	387	2.79	3.09	3.17
1953	418	396	387	3.42	3.24	3.17
1954	368	389	387	3.02	3.19	3.17
1955	413	398	387	3.38	3.26	3.17
1956	436	397	387	3.59	3.25	3.17
1957	417	401	387	3.41	3.28	3.17
1958	323	399	387	2.64	3.26	3.17
1959	445	396	387	3.65	3.24	3.17
1960	414	397	387	3.38	3.25	3.17
1961	475	398	387	3.89	3.26	3.17
1962	379	403	387	3.10	3.30	3.17
1963	440	405	387	3.61	3.31	3.17
1964	434	412	387	3.55	3.37	3.17
1965	403	411	387	3.29	3.36	3.17
1966	365	403	387	3.00	3.30	3.17
1967	352	396	387	2.89	3.24	3.17
1968	409	407	387	3.35	3.34	3.17
1969	300	389	387	2.47	3.19	3.17
1970	432	391	387	3.55	3.20	3.17
1971	434	388	387	3.55	3.18	3.17
1972	446	394	387	3.66	3.23	3.17
1973	354	386	387	2.89	3.16	3.17
1974	407	383	387	3.33	3.14	3.17
1975	407	384	387	3.32	3.14	3.17
1976	389	386	387	3.19	3.16	3.17
1977	419	393	387	3.43	3.22	3.17
1978	278	374	387	2.27	3.07	3.17
1979	341	380	387	2.78	3.11	3.17
1980	303	366	387	2.49	3.00	3.17
1981	438	367	387	3.59	3.00	3.17
1982	372	361	387	3.05	2.96	3.17
1983	301	354	387	2.46	2.90	3.17
1984	435	356	387	3.56	2.91	3.17
1985	417	357	387	3.41	2.92	3.17
1986	409	358	387	3.34	2.93	3.17
1987	464	361	387	3.80	2.95	3.17
1988	418	379	387	3.42	3.10	3.17
1989	446	389	387	3.65	3.18	3.17
1990	456	407	387	3.74	3.33	3.17
1991	383	402	387	3.14	3.29	3.17
1992	377	402	387	3.09	3.29	3.17
1993	284	399	387	2.34	3.27	3.17
1994	433	399	387	3.55	3.27	3.17
1995	339	390	387	2.79	3.20	3.17
1996	444	393	387	3.64	3.22	3.17
1997	380	386	387	3.11	3.17	3.17
1998	336	377	387	2.74	3.09	3.17
1999	489	380	387	4.01	3.11	3.17
Maximum	489	412		4.01	3.37	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 7e-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7e - Partial Planned Reuse in 2020

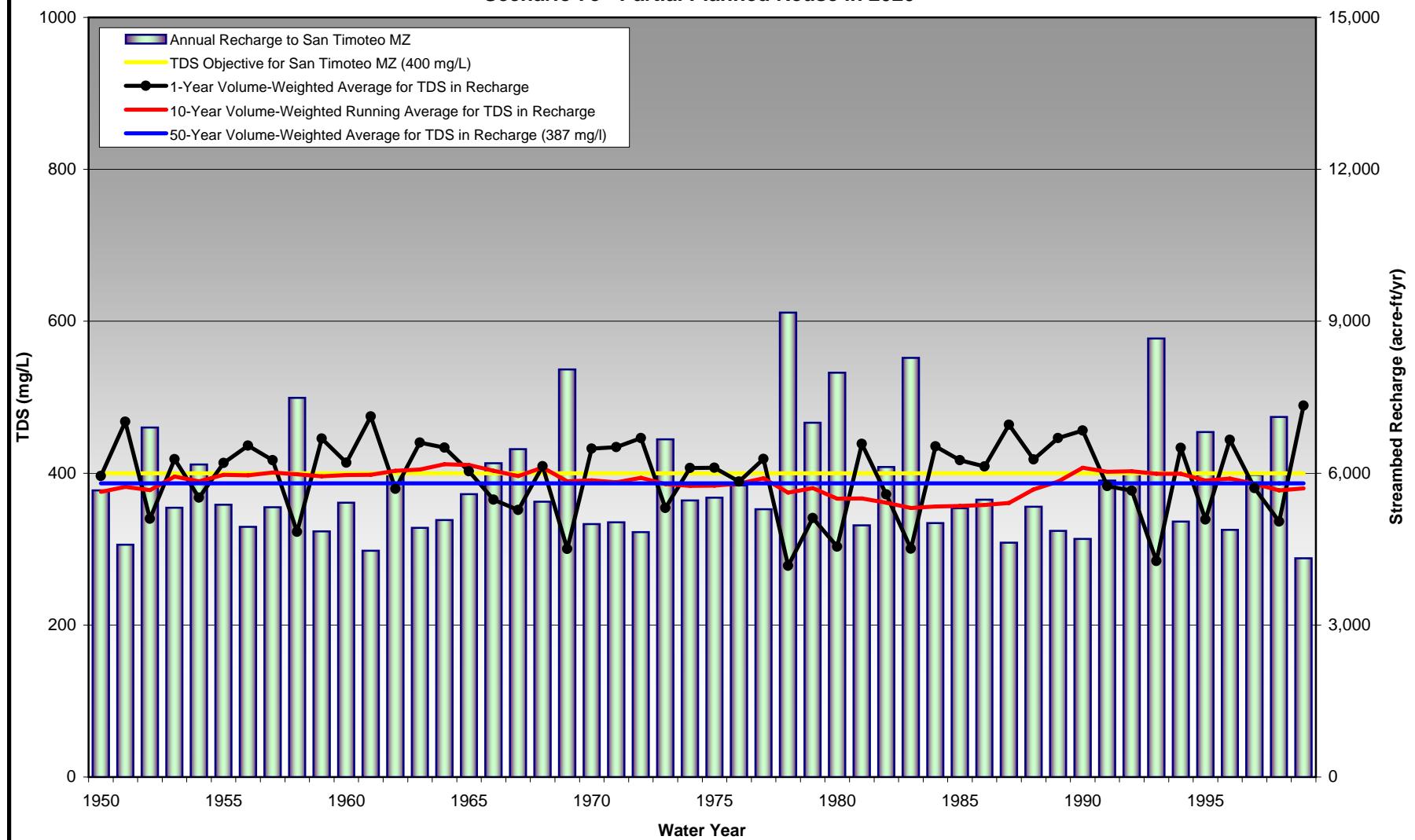


Figure 7e-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7e - Partial Planned Reuse in 2020

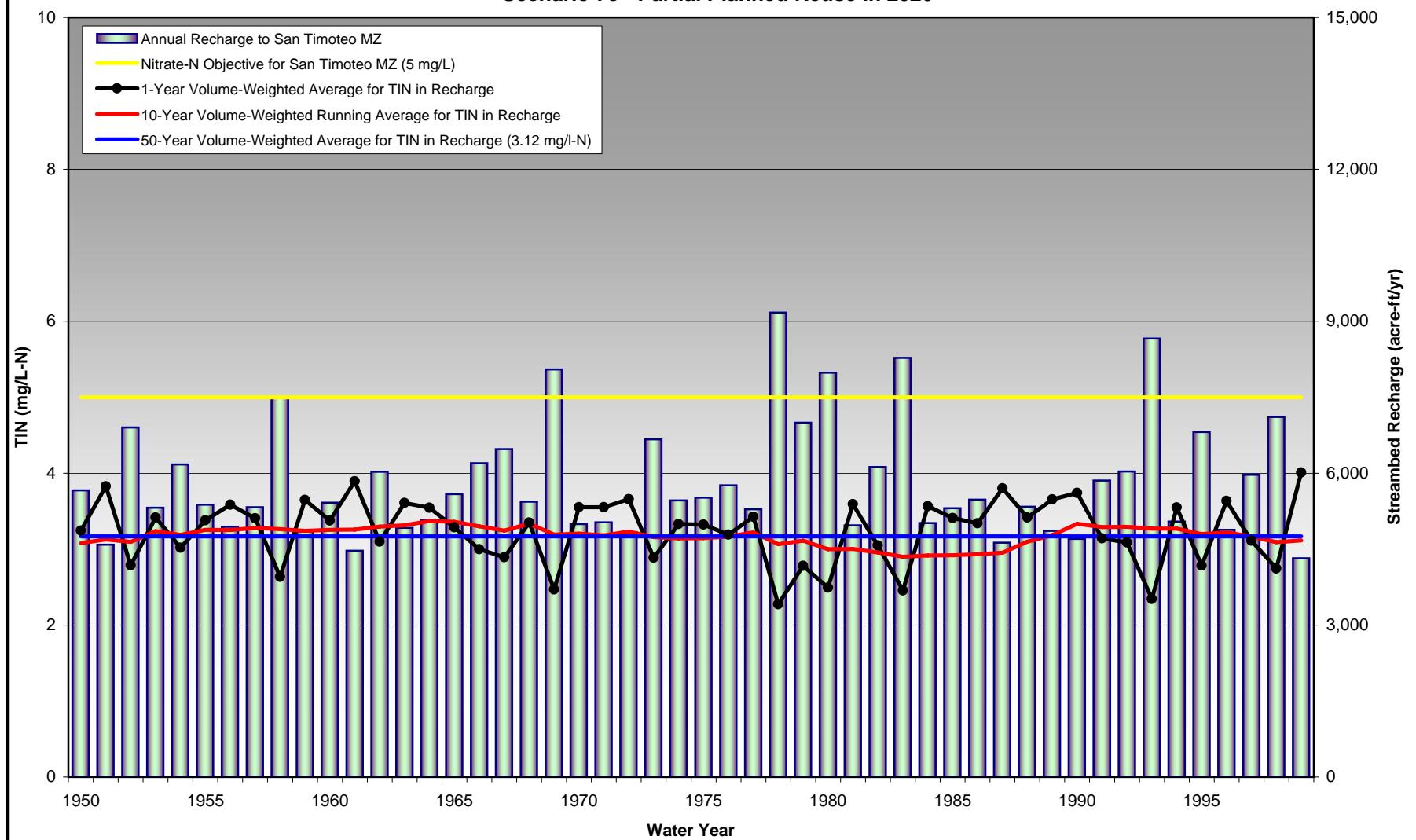


Table 7e-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 7e - Partial Planned Reuse in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	380	332	353	3.40	2.98	3.17
1951	464	341	353	4.18	3.06	3.17
1952	301	335	353	2.70	3.01	3.17
1953	432	363	353	3.88	3.26	3.17
1954	313	352	353	2.81	3.16	3.17
1955	411	370	353	3.69	3.32	3.17
1956	386	369	353	3.48	3.31	3.17
1957	407	375	353	3.65	3.37	3.17
1958	283	370	353	2.52	3.32	3.17
1959	437	368	353	3.93	3.30	3.17
1960	432	372	353	3.87	3.34	3.17
1961	470	373	353	4.24	3.34	3.17
1962	349	380	353	3.12	3.41	3.17
1963	422	379	353	3.79	3.40	3.17
1964	431	392	353	3.87	3.52	3.17
1965	378	389	353	3.38	3.49	3.17
1966	319	381	353	2.87	3.41	3.17
1967	290	366	353	2.60	3.28	3.17
1968	385	380	353	3.46	3.42	3.17
1969	241	353	353	2.16	3.17	3.17
1970	387	350	353	3.49	3.14	3.17
1971	410	346	353	3.68	3.11	3.17
1972	416	352	353	3.74	3.16	3.17
1973	354	347	353	3.16	3.11	3.17
1974	379	343	353	3.40	3.08	3.17
1975	397	345	353	3.56	3.09	3.17
1976	350	348	353	3.14	3.12	3.17
1977	415	361	353	3.73	3.24	3.17
1978	250	342	353	2.22	3.06	3.17
1979	316	356	353	2.82	3.18	3.17
1980	253	338	353	2.25	3.02	3.17
1981	444	339	353	3.99	3.04	3.17
1982	322	332	353	2.88	2.97	3.17
1983	255	319	353	2.26	2.85	3.17
1984	418	321	353	3.75	2.87	3.17
1985	403	322	353	3.61	2.88	3.17
1986	384	324	353	3.44	2.90	3.17
1987	459	326	353	4.14	2.92	3.17
1988	433	346	353	3.89	3.10	3.17
1989	446	357	353	4.01	3.20	3.17
1990	438	383	353	3.94	3.43	3.17
1991	330	372	353	2.96	3.33	3.17
1992	357	376	353	3.20	3.37	3.17
1993	230	369	353	2.06	3.31	3.17
1994	422	369	353	3.79	3.31	3.17
1995	269	352	353	2.42	3.16	3.17
1996	397	353	353	3.57	3.17	3.17
1997	344	345	353	3.08	3.09	3.17
1998	310	334	353	2.76	3.00	3.17
1999	475	336	353	4.28	3.01	3.17
Maximum	475	392		4.28	3.52	

Figure 7e-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7e - Partial Planned Reuse in 2020

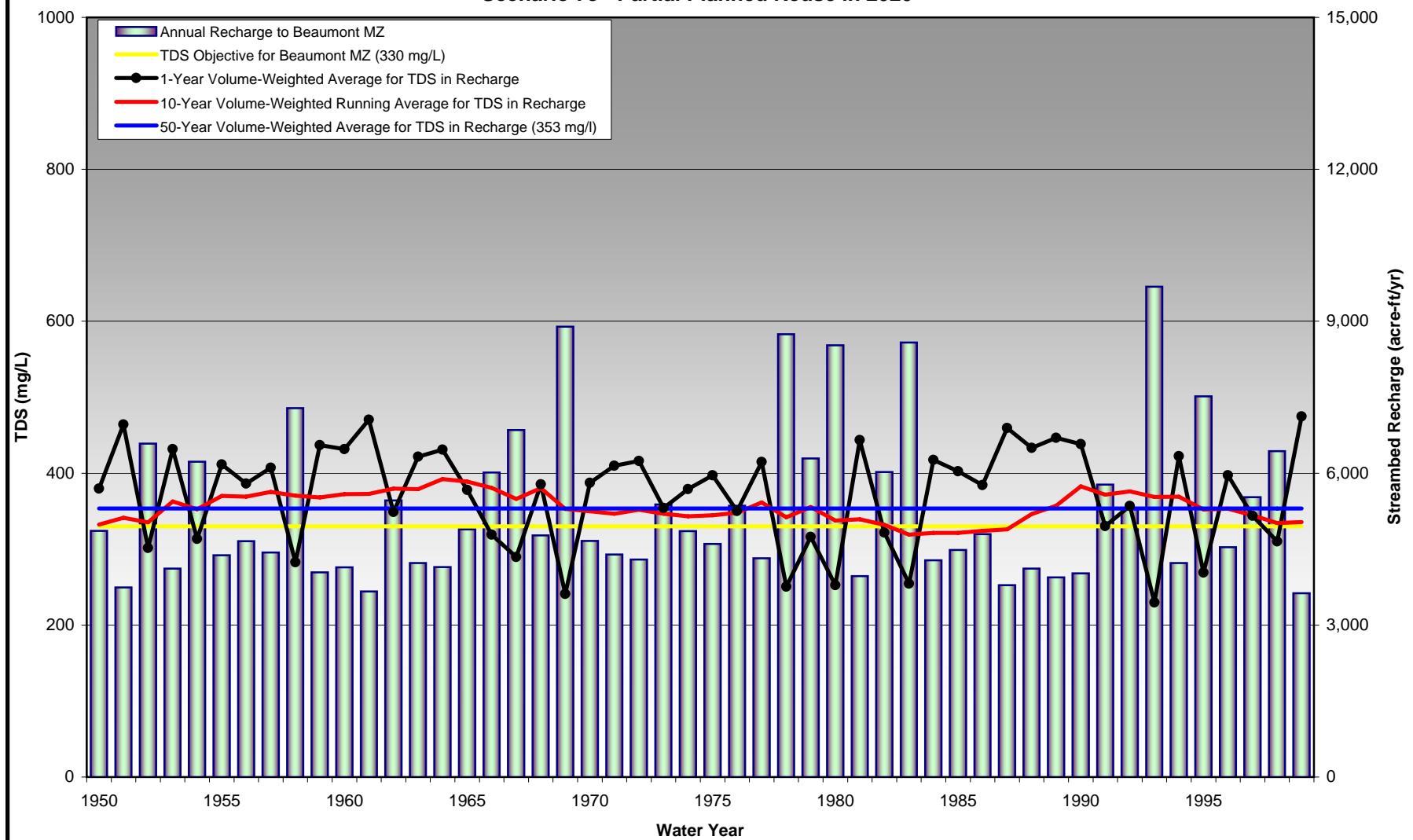


Figure 7e-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7e - Partial Planned Reuse in 2020

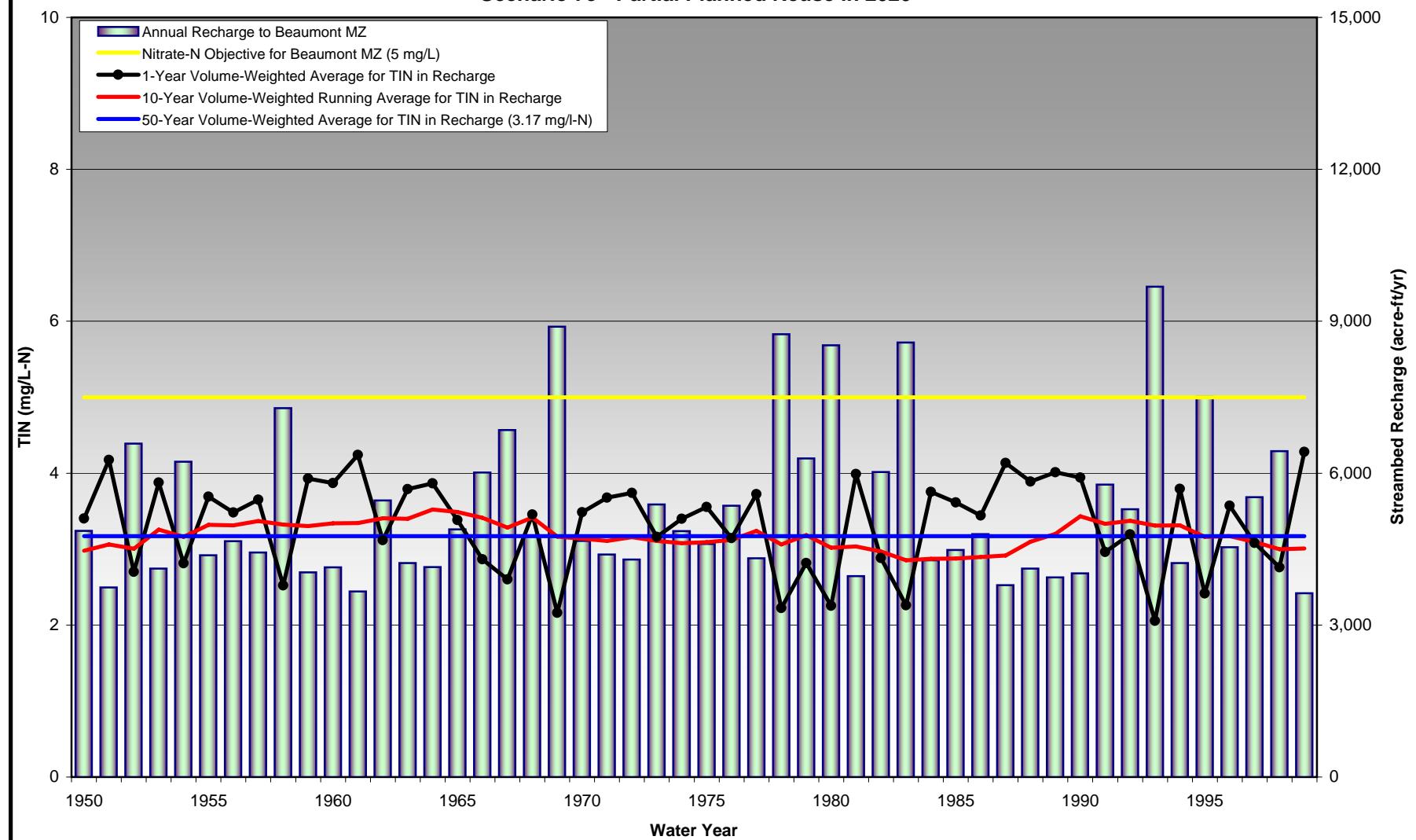


Table 7f-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 7f - Maximum Discharge in 2020

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	50 Year	August Only
1950	556	526	513	464	490	611	7.04	6.66	6.48	5.75	6.13	7.85
1951	603	540	524	473	490	611	7.65	6.83	6.61	5.86	6.13	7.85
1952	411	517	494	464	490	611	5.17	6.54	6.24	5.75	6.13	7.85
1953	582	553	537	501	490	611	7.37	7.00	6.80	6.29	6.13	7.85
1954	502	531	518	495	490	611	6.34	6.72	6.55	6.21	6.13	7.85
1955	564	532	519	516	490	610	7.14	6.74	6.57	6.52	6.13	7.84
1956	482	508	498	511	490	611	6.14	6.43	6.30	6.45	6.13	7.85
1957	569	540	536	514	490	611	7.20	6.84	6.79	6.50	6.13	7.85
1958	436	511	504	520	490	601	5.45	6.45	6.37	6.58	6.13	7.72
1959	599	530	520	519	490	611	7.61	6.71	6.58	6.57	6.13	7.85
1960	579	533	523	521	490	611	7.34	6.75	6.61	6.59	6.13	7.85
1961	615	560	548	522	490	605	7.83	7.09	6.93	6.60	6.13	7.76
1962	508	548	536	536	490	611	6.42	6.93	6.77	6.78	6.13	7.86
1963	545	569	566	533	490	611	6.91	7.22	7.18	6.74	6.13	7.85
1964	580	565	562	540	490	611	7.35	7.17	7.13	6.84	6.13	7.85
1965	549	559	556	539	490	607	6.94	7.09	7.05	6.82	6.13	7.79
1966	448	526	521	534	490	611	5.62	6.65	6.58	6.75	6.13	7.85
1967	411	506	495	514	490	607	5.13	6.39	6.24	6.49	6.13	7.79
1968	533	504	493	526	490	612	6.77	6.36	6.22	6.66	6.13	7.86
1969	298	448	417	476	490	605	3.61	5.61	5.21	5.98	6.13	7.75
1970	556	449	418	474	490	611	7.05	5.64	5.22	5.97	6.13	7.85
1971	564	472	433	472	490	611	7.15	5.94	5.41	5.93	6.13	7.85
1972	559	502	458	475	490	603	7.09	6.33	5.74	5.98	6.13	7.74
1973	497	495	453	472	490	611	6.25	6.23	5.66	5.93	6.13	7.86
1974	523	540	538	468	490	612	6.62	6.83	6.81	5.88	6.13	7.86
1975	562	541	539	469	490	612	7.12	6.84	6.82	5.89	6.13	7.86
1976	563	541	539	479	490	612	7.12	6.84	6.82	6.02	6.13	7.86
1977	561	541	539	494	490	435	7.10	6.84	6.82	6.22	6.13	5.48
1978	345	511	484	468	490	612	4.24	6.44	6.09	5.87	6.13	7.86
1979	478	502	476	505	490	612	5.95	6.30	5.97	6.35	6.13	7.86
1980	352	460	428	474	490	611	3.87	5.65	5.18	5.86	6.13	7.84
1981	583	464	429	475	490	612	7.39	5.71	5.21	5.87	6.13	7.86
1982	469	445	419	468	490	611	5.91	5.47	5.07	5.78	6.13	7.85
1983	395	455	433	456	490	505	4.67	5.56	5.20	5.60	6.13	6.40
1984	558	471	442	458	490	611	7.07	5.78	5.33	5.63	6.13	7.84
1985	550	511	494	457	490	612	6.95	6.40	6.16	5.62	6.13	7.86
1986	516	497	484	454	490	611	6.51	6.22	6.03	5.58	6.13	7.86
1987	594	522	505	456	490	612	7.54	6.55	6.30	5.60	6.13	7.86
1988	547	553	551	481	490	611	6.92	7.00	6.98	5.93	6.13	7.85
1989	581	558	556	489	490	612	7.37	7.06	7.04	6.04	6.13	7.86
1990	586	565	563	525	490	612	7.44	7.15	7.13	6.60	6.13	7.86
1991	476	557	552	515	490	611	6.00	7.05	6.99	6.47	6.13	7.85
1992	491	536	531	518	490	612	6.18	6.78	6.72	6.50	6.13	7.86
1993	330	493	458	498	490	612	3.74	6.15	5.63	6.22	6.13	7.86
1994	580	492	457	500	490	612	7.34	6.14	5.63	6.24	6.13	7.86
1995	395	454	427	481	490	612	4.73	5.60	5.20	5.97	6.13	7.86
1996	536	466	434	483	490	612	6.81	5.76	5.29	5.99	6.13	7.86
1997	525	473	439	478	490	612	6.62	5.85	5.35	5.93	6.13	7.86
1998	404	488	471	464	490	606	5.05	6.11	5.87	5.75	6.13	7.78
1999	611	494	474	466	490	612	7.77	6.19	5.92	5.77	6.13	7.86
Maximum	615	569	566	540	490	612	7.83	7.22	7.18	6.84	6.13	7.86

Figure 7f-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7f - Maximum Discharge in 2020

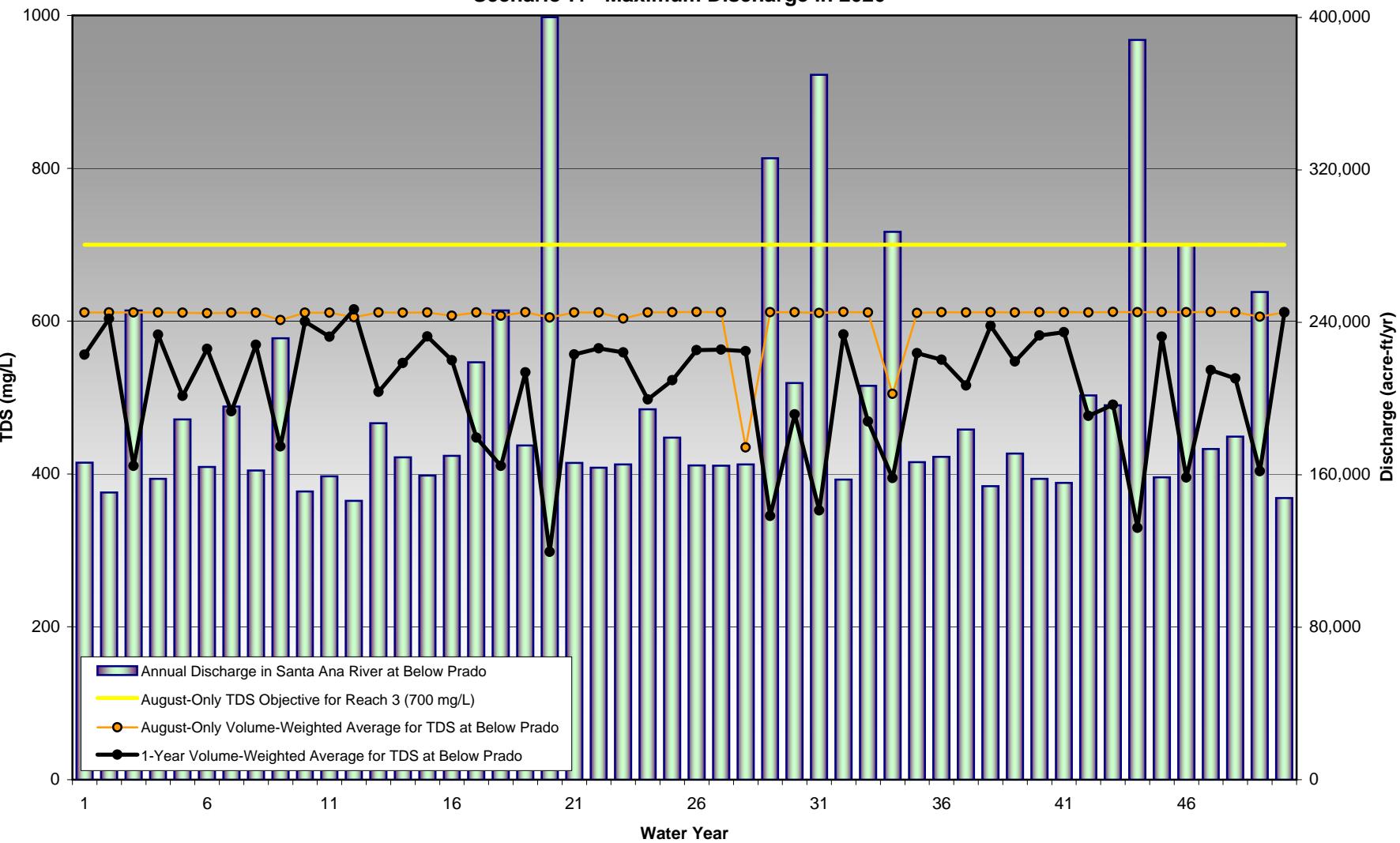


Figure 7f-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 7f - Maximum Discharge in 2020

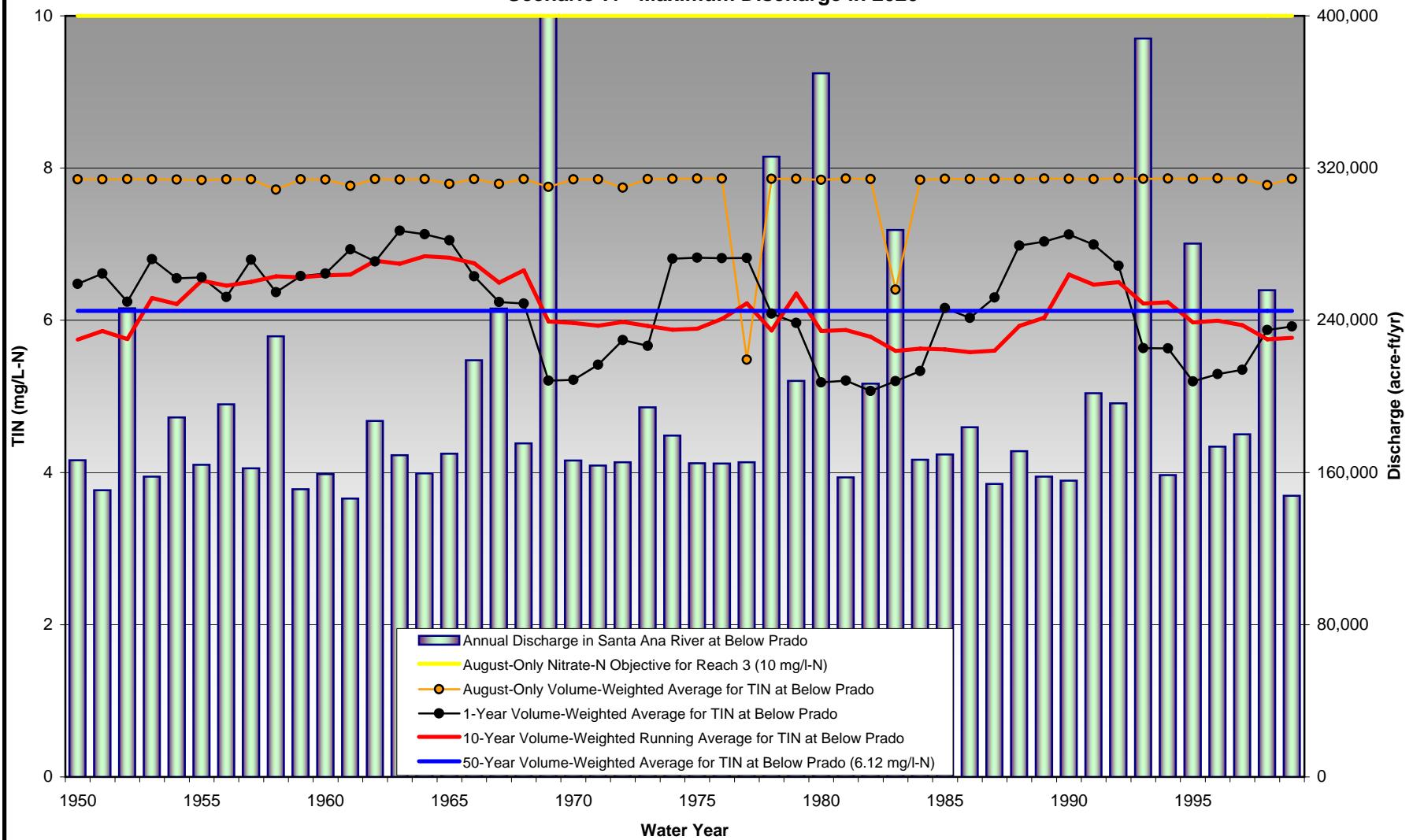


Figure 7f-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 7f - Maximum Discharge in 2020

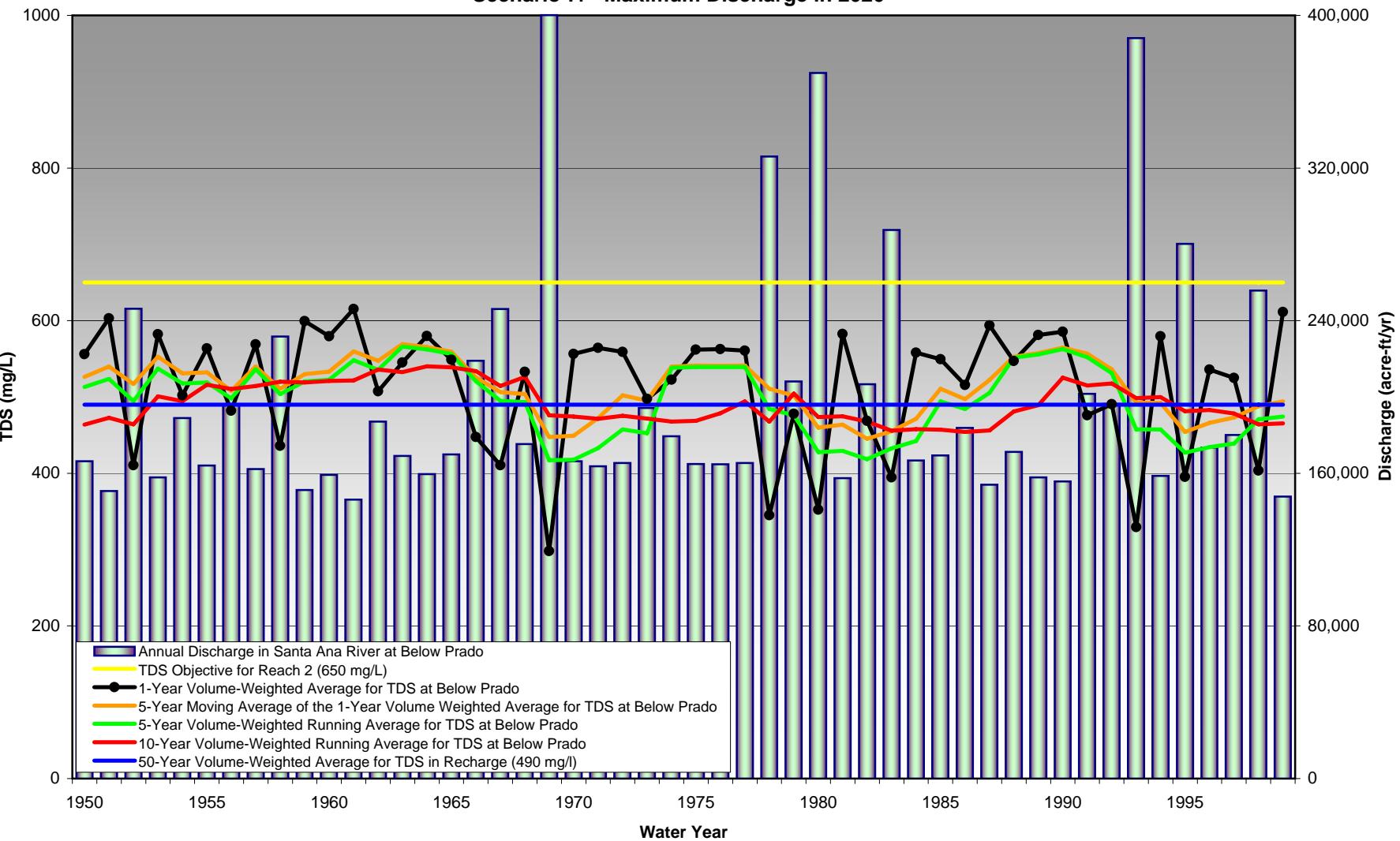


Table 7f-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 7f - Maximum Discharge in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	595	552	569	4.25	3.90	4.04
1951	615	556	569	4.39	3.93	4.04
1952	526	552	569	3.73	3.90	4.04
1953	606	572	569	4.33	4.06	4.04
1954	570	569	569	4.05	4.04	4.04
1955	596	579	569	4.25	4.12	4.04
1956	584	577	569	4.17	4.11	4.04
1957	603	580	569	4.31	4.13	4.04
1958	530	583	569	3.74	4.15	4.04
1959	617	582	569	4.41	4.15	4.04
1960	609	584	569	4.35	4.16	4.04
1961	622	584	569	4.45	4.17	4.04
1962	575	590	569	4.09	4.21	4.04
1963	592	589	569	4.22	4.20	4.04
1964	607	592	569	4.34	4.23	4.04
1965	592	592	569	4.22	4.22	4.04
1966	549	588	569	3.90	4.19	4.04
1967	530	580	569	3.75	4.13	4.04
1968	592	587	569	4.22	4.18	4.04
1969	453	567	569	3.13	4.03	4.04
1970	598	566	569	4.27	4.02	4.04
1971	599	565	569	4.28	4.01	4.04
1972	602	567	569	4.30	4.03	4.04
1973	572	565	569	4.07	4.01	4.04
1974	583	563	569	4.16	4.00	4.04
1975	602	564	569	4.30	4.01	4.04
1976	593	568	569	4.23	4.04	4.04
1977	604	576	569	4.31	4.10	4.04
1978	470	562	569	3.26	3.98	4.04
1979	555	575	569	3.91	4.09	4.04
1980	471	560	569	3.18	3.96	4.04
1981	611	561	569	4.37	3.97	4.04
1982	553	556	569	3.93	3.93	4.04
1983	497	549	569	3.42	3.86	4.04
1984	595	550	569	4.25	3.87	4.04
1985	594	549	569	4.24	3.87	4.04
1986	584	548	569	4.16	3.86	4.04
1987	615	549	569	4.40	3.87	4.04
1988	598	563	569	4.27	3.98	4.04
1989	609	568	569	4.35	4.02	4.04
1990	605	584	569	4.32	4.15	4.04
1991	565	580	569	4.02	4.12	4.04
1992	564	581	569	4.01	4.13	4.04
1993	443	572	569	3.00	4.06	4.04
1994	603	573	569	4.31	4.07	4.04
1995	504	563	569	3.49	3.99	4.04
1996	597	564	569	4.27	4.00	4.04
1997	576	561	569	4.10	3.97	4.04
1998	510	552	569	3.59	3.90	4.04
1999	619	553	569	4.43	3.91	4.04
Maximum	622	592		4.45	4.23	

Figure 7f-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7f - Maximum Discharge in 2020

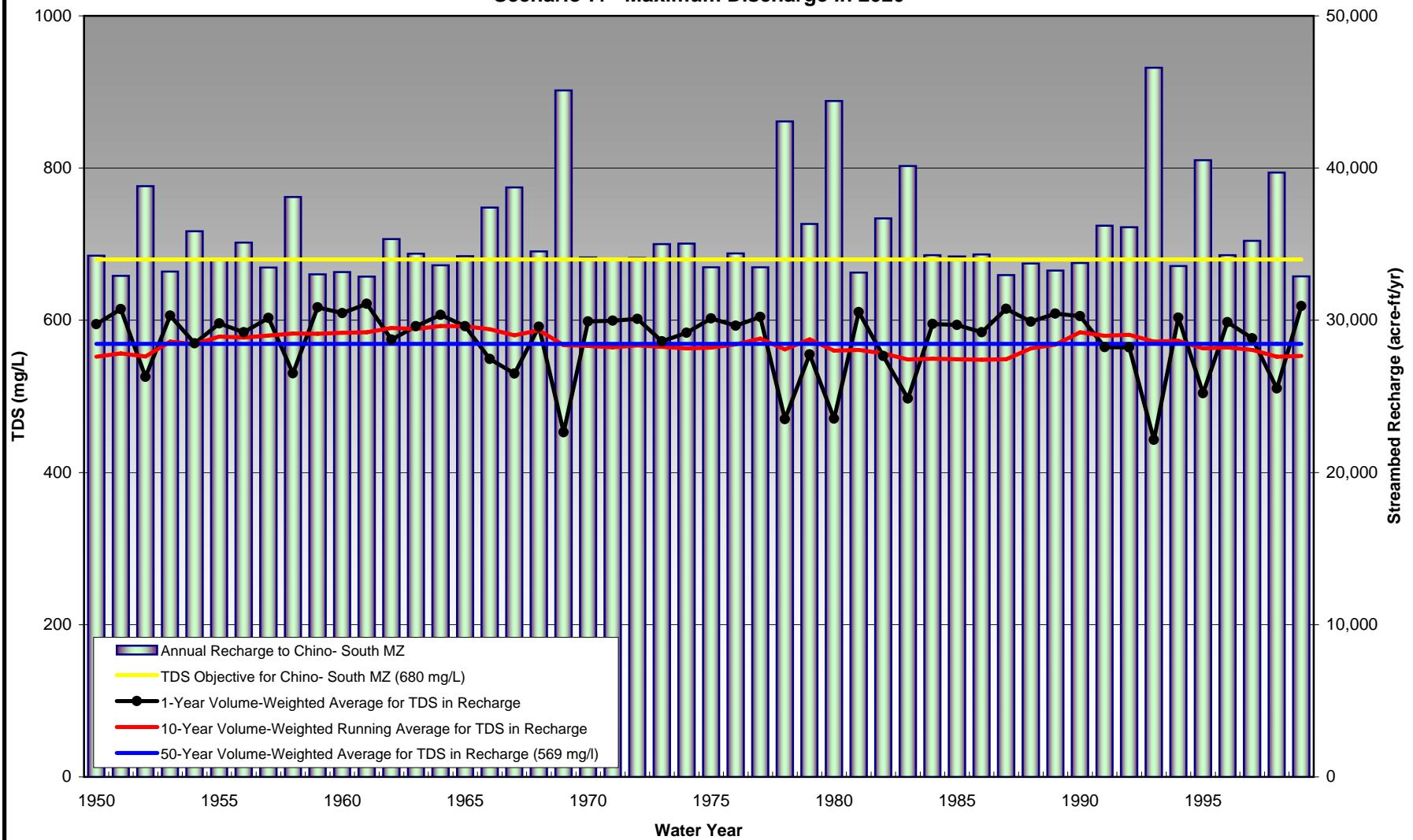


Figure 7f-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 7f - Maximum Discharge in 2020

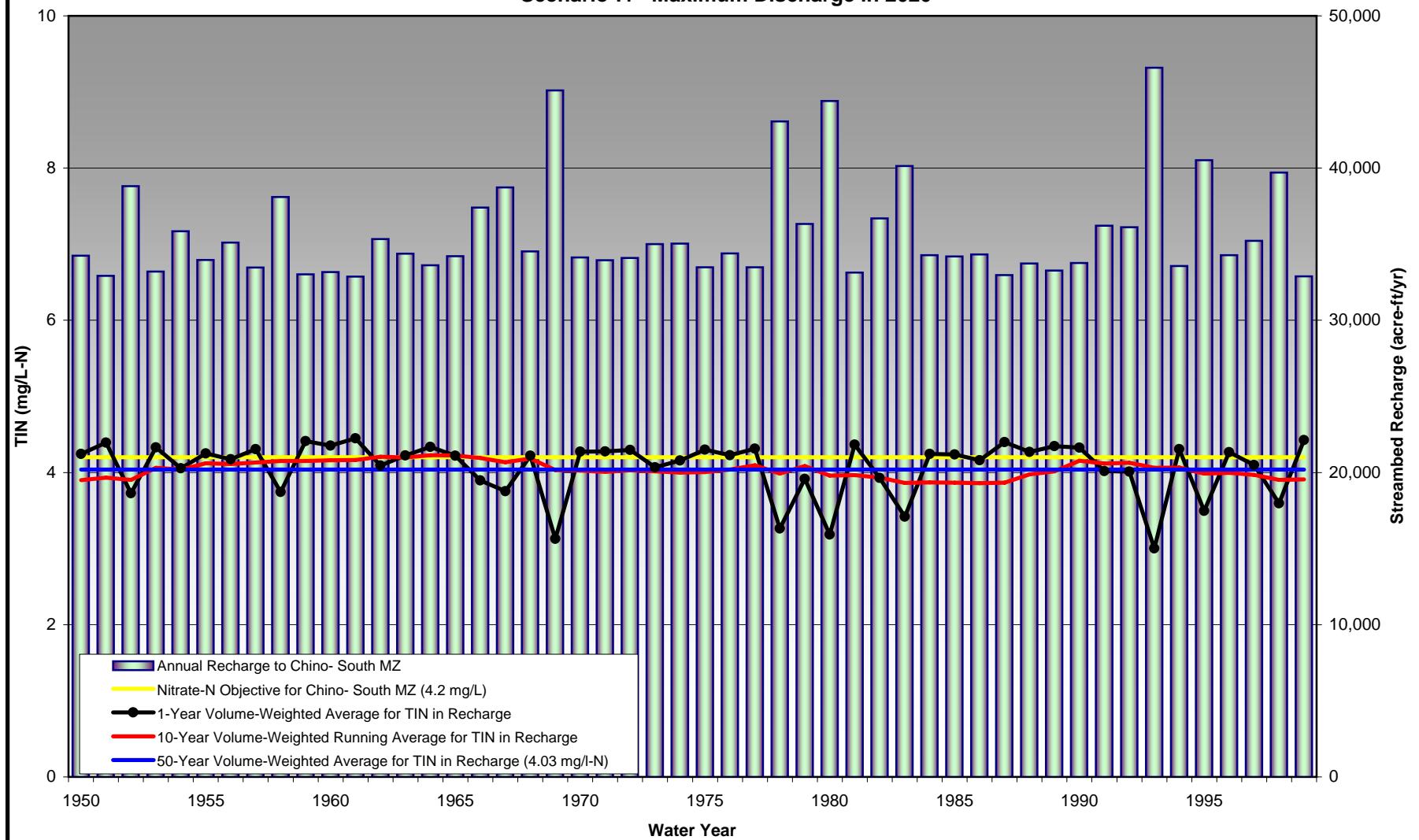


Table 7f-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 7f - Maximum Discharge in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	459	395	422	6.17	5.15	5.58
1951	519	402	422	7.09	5.25	5.58
1952	367	398	422	4.80	5.19	5.58
1953	495	429	422	6.71	5.69	5.58
1954	421	423	422	5.59	5.61	5.58
1955	471	438	422	6.37	5.85	5.58
1956	467	439	422	6.33	5.86	5.58
1957	491	445	422	6.64	5.96	5.58
1958	362	448	422	4.63	6.00	5.58
1959	508	446	422	6.92	5.98	5.58
1960	504	450	422	6.85	6.03	5.58
1961	527	451	422	7.22	6.04	5.58
1962	427	459	422	5.69	6.17	5.58
1963	476	458	422	6.44	6.15	5.58
1964	489	465	422	6.63	6.26	5.58
1965	453	463	422	6.06	6.23	5.58
1966	394	454	422	5.16	6.09	5.58
1967	372	441	422	4.84	5.88	5.58
1968	461	454	422	6.21	6.09	5.58
1969	291	421	422	3.46	5.56	5.58
1970	463	418	422	6.24	5.52	5.58
1971	463	414	422	6.22	5.46	5.58
1972	486	419	422	6.59	5.53	5.58
1973	424	415	422	5.61	5.46	5.58
1974	448	412	422	6.02	5.42	5.58
1975	486	414	422	6.58	5.45	5.58
1976	453	420	422	6.08	5.54	5.58
1977	487	431	422	6.61	5.72	5.58
1978	306	409	422	3.72	5.37	5.58
1979	411	431	422	5.42	5.72	5.58
1980	304	407	422	3.66	5.34	5.58
1981	504	410	422	6.86	5.38	5.58
1982	397	403	422	5.24	5.27	5.58
1983	326	391	422	4.09	5.08	5.58
1984	466	392	422	6.28	5.10	5.58
1985	474	391	422	6.40	5.09	5.58
1986	453	391	422	6.06	5.09	5.58
1987	516	393	422	7.04	5.11	5.58
1988	476	413	422	6.43	5.44	5.58
1989	485	419	422	6.56	5.53	5.58
1990	490	448	422	6.65	5.99	5.58
1991	415	439	422	5.51	5.86	5.58
1992	402	440	422	5.29	5.87	5.58
1993	282	426	422	3.32	5.63	5.58
1994	484	427	422	6.55	5.65	5.58
1995	346	413	422	4.38	5.43	5.58
1996	462	414	422	6.21	5.44	5.58
1997	421	407	422	5.55	5.34	5.58
1998	350	395	422	4.42	5.14	5.58
1999	525	397	422	7.18	5.17	5.58
Maximum	527	465		7.22	6.26	

Figure 7f-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7f - Maximum Discharge in 2020

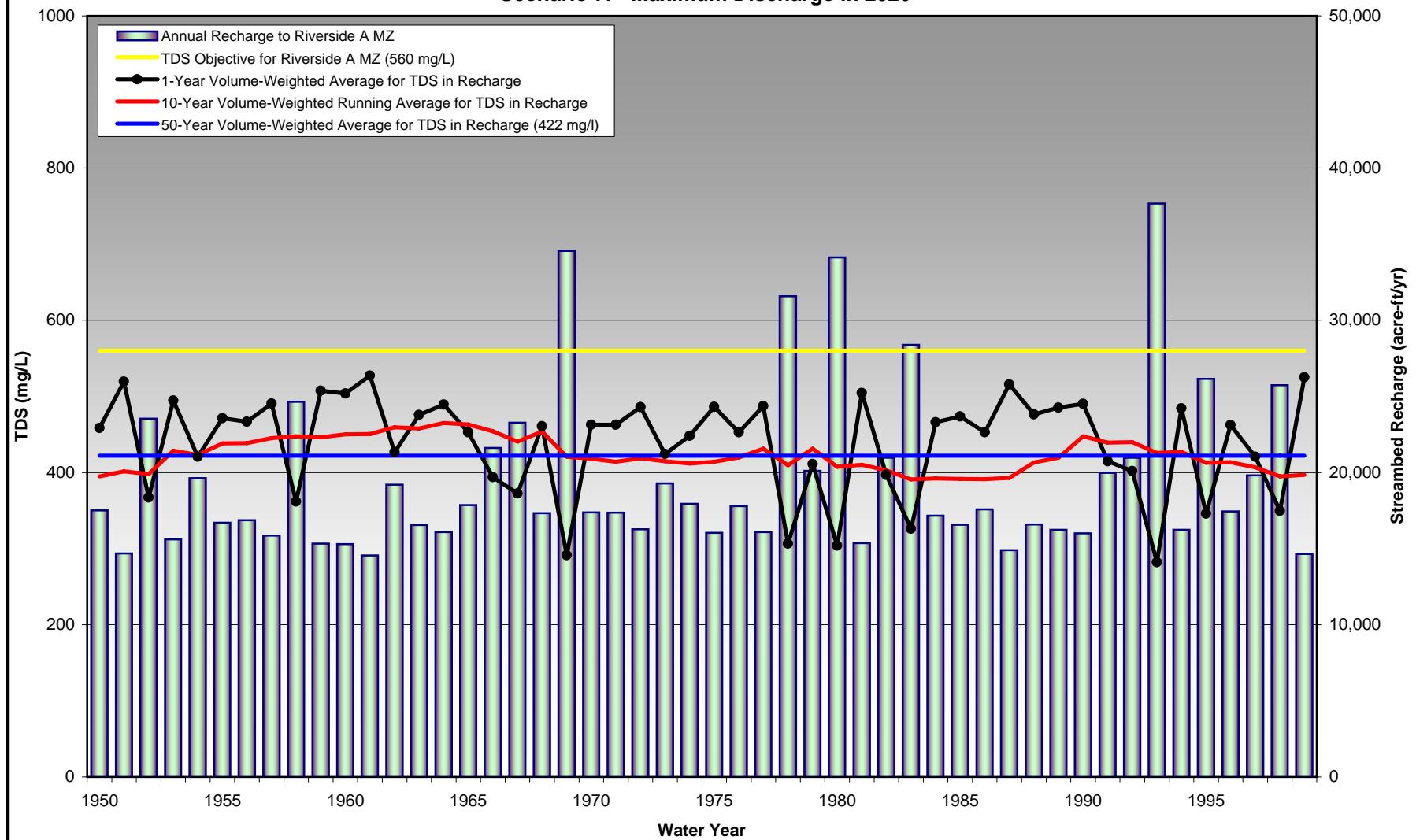


Figure 7f-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 7f - Maximum Discharge in 2020

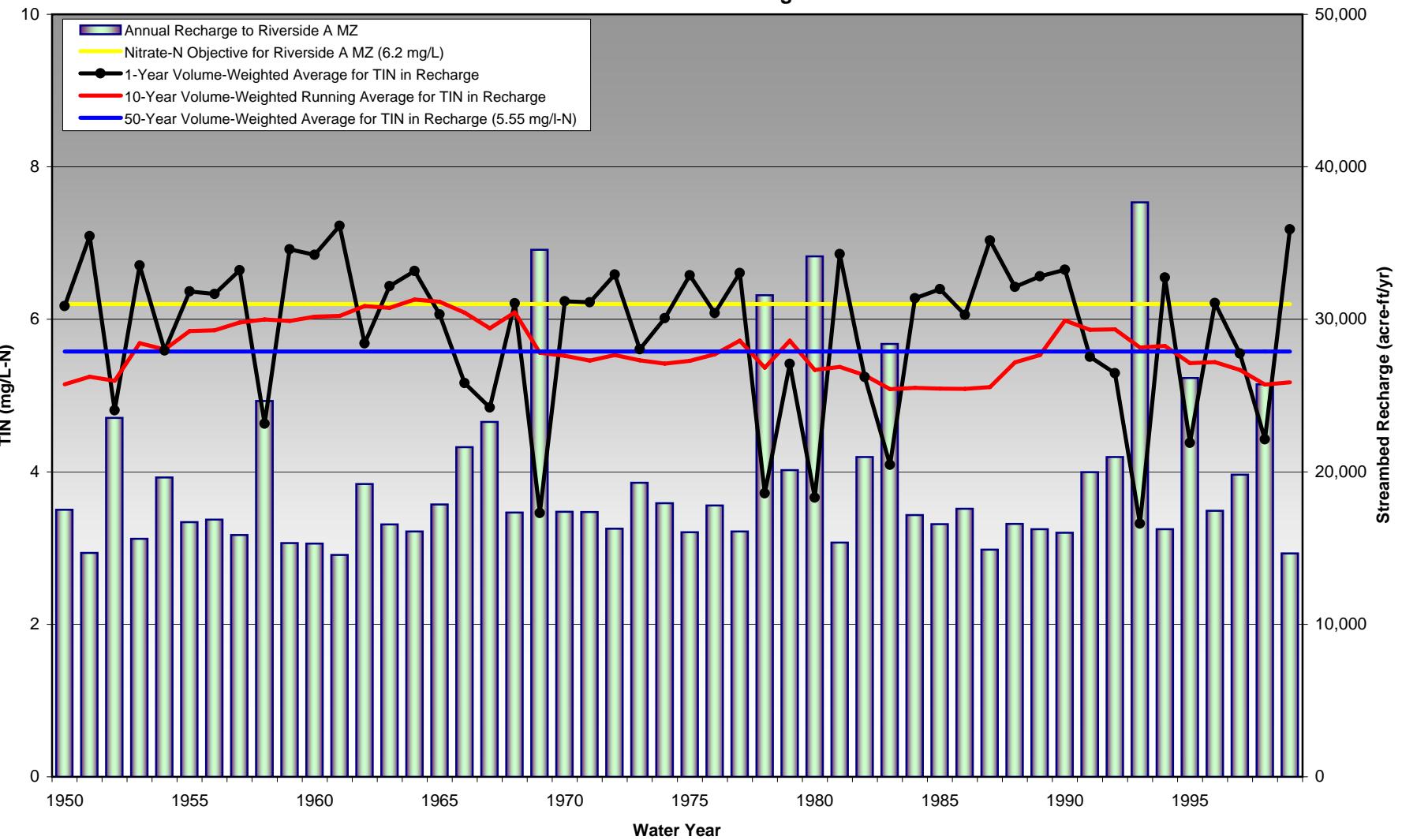


Table 7f-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 7f - Maximum Discharge in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	162	162	164	1.29	1.24	1.26
1951	203	164	164	1.52	1.25	1.26
1952	149	164	164	1.19	1.25	1.26
1953	185	166	164	1.41	1.28	1.26
1954	157	164	164	1.24	1.27	1.26
1955	169	166	164	1.34	1.29	1.26
1956	147	164	164	1.19	1.28	1.26
1957	181	165	164	1.39	1.29	1.26
1958	161	164	164	1.24	1.28	1.26
1959	202	163	164	1.53	1.28	1.26
1960	183	165	164	1.41	1.29	1.26
1961	213	164	164	1.60	1.29	1.26
1962	163	168	164	1.27	1.31	1.26
1963	160	166	164	1.27	1.30	1.26
1964	183	169	164	1.41	1.31	1.26
1965	168	169	164	1.30	1.31	1.26
1966	151	167	164	1.20	1.30	1.26
1967	153	163	164	1.20	1.27	1.26
1968	161	164	164	1.26	1.28	1.26
1969	166	164	164	1.25	1.26	1.26
1970	160	163	164	1.28	1.25	1.26
1971	166	162	164	1.31	1.25	1.26
1972	174	162	164	1.35	1.25	1.26
1973	168	163	164	1.30	1.26	1.26
1974	157	162	164	1.24	1.25	1.26
1975	185	163	164	1.40	1.25	1.26
1976	155	163	164	1.22	1.26	1.26
1977	173	166	164	1.34	1.27	1.26
1978	163	165	164	1.23	1.26	1.26
1979	165	165	164	1.27	1.27	1.26
1980	161	164	164	1.23	1.26	1.26
1981	193	165	164	1.45	1.26	1.26
1982	143	162	164	1.16	1.25	1.26
1983	162	162	164	1.25	1.25	1.26
1984	178	163	164	1.35	1.25	1.26
1985	168	162	164	1.30	1.25	1.26
1986	172	163	164	1.32	1.25	1.26
1987	201	164	164	1.50	1.25	1.26
1988	175	164	164	1.34	1.26	1.26
1989	185	165	164	1.41	1.27	1.26
1990	179	167	164	1.37	1.29	1.26
1991	150	164	164	1.20	1.27	1.26
1992	150	165	164	1.19	1.28	1.26
1993	161	164	164	1.21	1.26	1.26
1994	183	164	164	1.39	1.26	1.26
1995	159	163	164	1.21	1.25	1.26
1996	173	163	164	1.32	1.25	1.26
1997	163	162	164	1.26	1.24	1.26
1998	166	163	164	1.27	1.24	1.26
1999	212	163	164	1.58	1.25	1.26
Maximum	213	169		1.60	1.31	

Figure 7f-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7f - Maximum Discharge in 2020

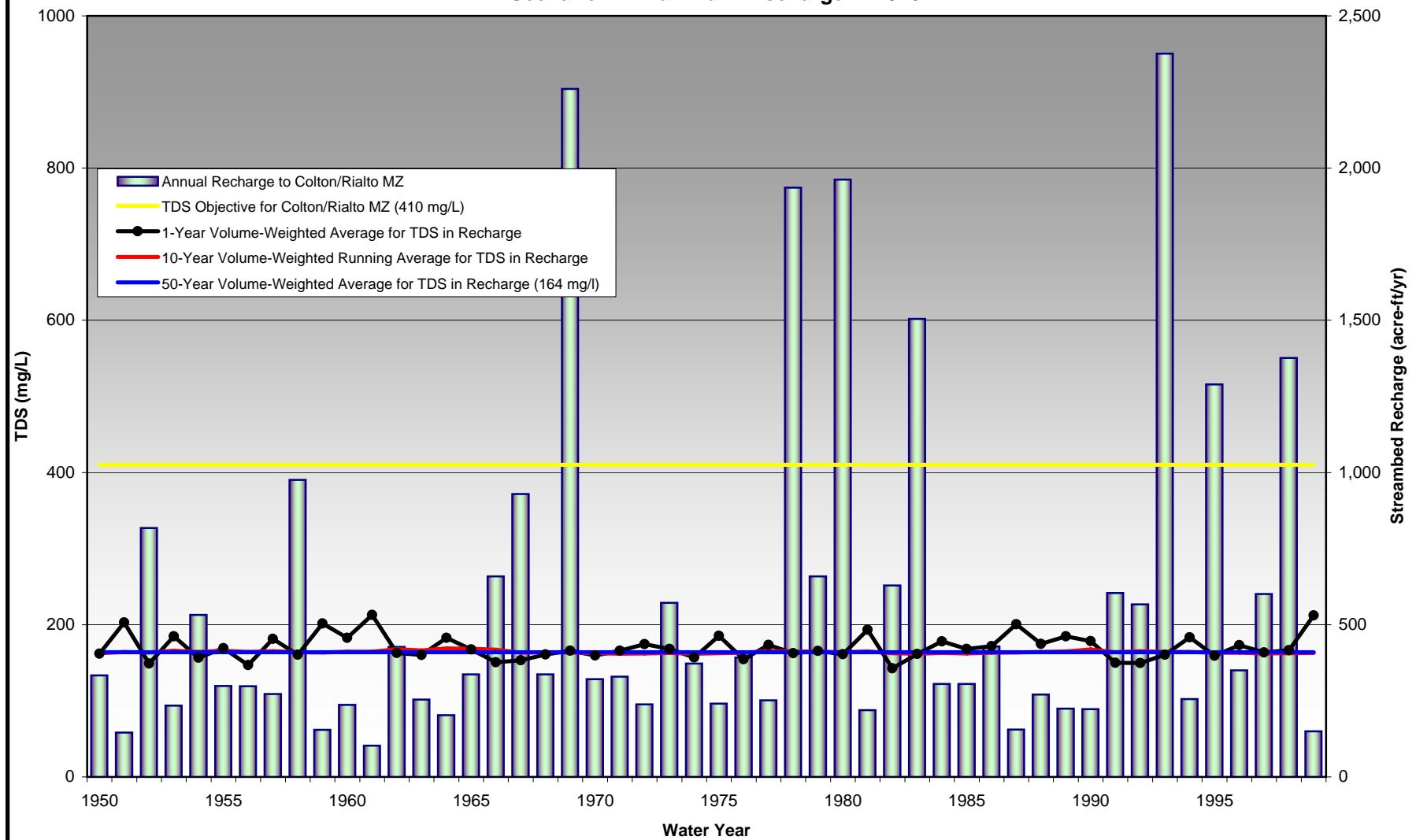


Figure 7f-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 7f - Maximum Discharge in 2020

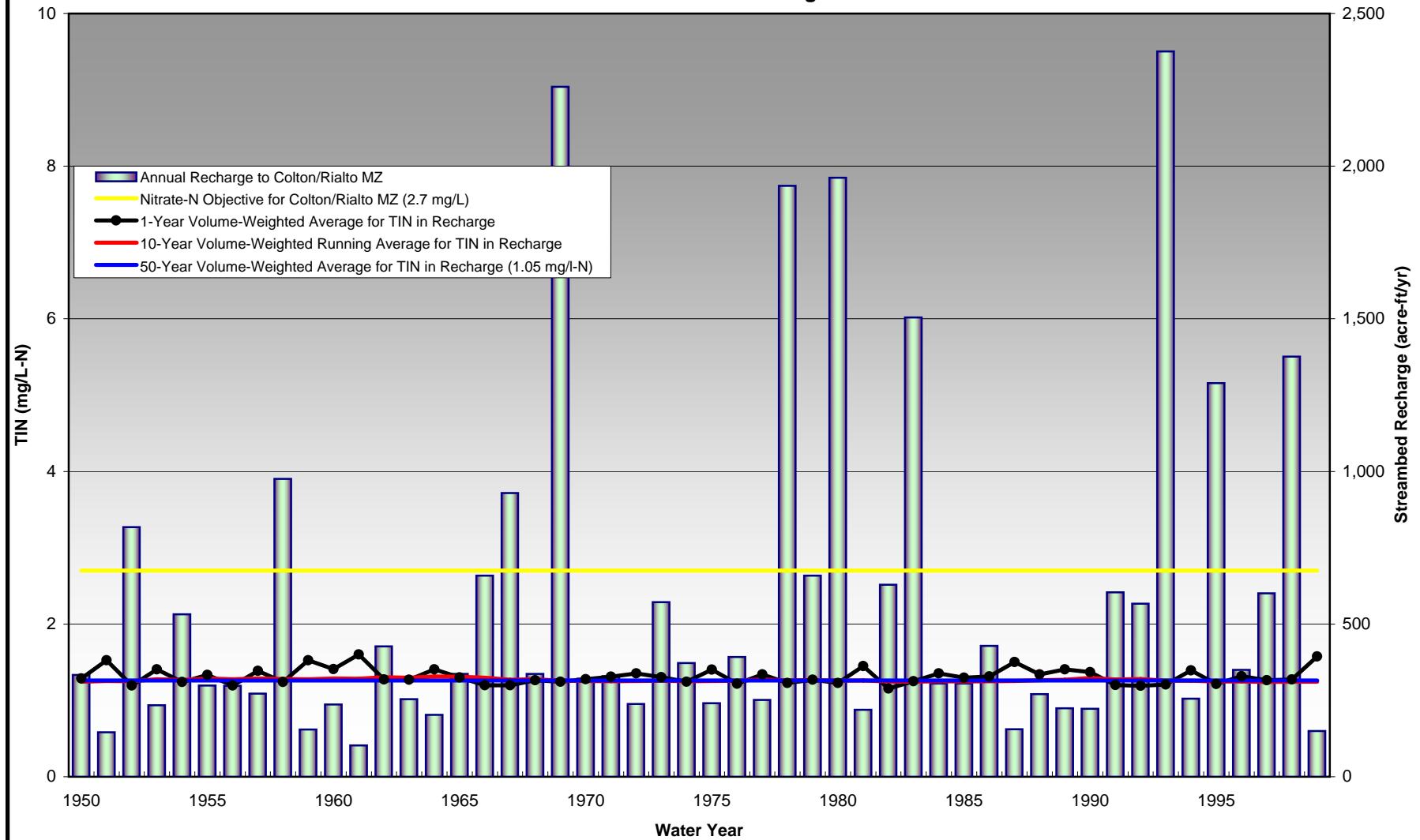


Table 7f-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 7f - Maximum Discharge in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	363	318	329	2.78	2.42	2.51
1951	403	321	329	3.09	2.44	2.51
1952	296	318	329	2.26	2.41	2.51
1953	360	331	329	2.75	2.52	2.51
1954	326	328	329	2.50	2.50	2.51
1955	355	337	329	2.72	2.57	2.51
1956	393	338	329	3.01	2.58	2.51
1957	355	340	329	2.71	2.60	2.51
1958	284	344	329	2.17	2.63	2.51
1959	386	344	329	2.95	2.63	2.51
1960	359	343	329	2.75	2.63	2.51
1961	427	345	329	3.28	2.64	2.51
1962	334	350	329	2.56	2.68	2.51
1963	389	353	329	2.99	2.70	2.51
1964	386	359	329	2.96	2.75	2.51
1965	358	359	329	2.74	2.75	2.51
1966	331	353	329	2.54	2.70	2.51
1967	304	346	329	2.31	2.65	2.51
1968	356	357	329	2.73	2.73	2.51
1969	253	334	329	1.89	2.55	2.51
1970	362	334	329	2.78	2.55	2.51
1971	365	331	329	2.79	2.52	2.51
1972	398	335	329	3.05	2.56	2.51
1973	306	328	329	2.34	2.50	2.51
1974	357	326	329	2.74	2.49	2.51
1975	357	326	329	2.72	2.49	2.51
1976	360	329	329	2.76	2.50	2.51
1977	367	335	329	2.81	2.55	2.51
1978	253	319	329	1.90	2.43	2.51
1979	290	328	329	2.21	2.51	2.51
1980	269	317	329	2.04	2.41	2.51
1981	359	317	329	2.74	2.41	2.51
1982	314	311	329	2.41	2.37	2.51
1983	260	304	329	1.97	2.31	2.51
1984	354	304	329	2.69	2.31	2.51
1985	356	304	329	2.72	2.31	2.51
1986	330	302	329	2.52	2.30	2.51
1987	389	303	329	2.97	2.31	2.51
1988	356	316	329	2.73	2.41	2.51
1989	371	323	329	2.84	2.47	2.51
1990	391	338	329	2.99	2.58	2.51
1991	342	336	329	2.63	2.57	2.51
1992	332	338	329	2.55	2.58	2.51
1993	258	338	329	1.94	2.58	2.51
1994	359	339	329	2.74	2.58	2.51
1995	287	330	329	2.17	2.51	2.51
1996	371	333	329	2.83	2.54	2.51
1997	330	329	329	2.51	2.51	2.51
1998	273	318	329	2.06	2.42	2.51
1999	395	320	329	3.02	2.43	2.51
Maximum	427	359		3.28	2.75	

Figure 7f-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7f - Maximum Discharge in 2020

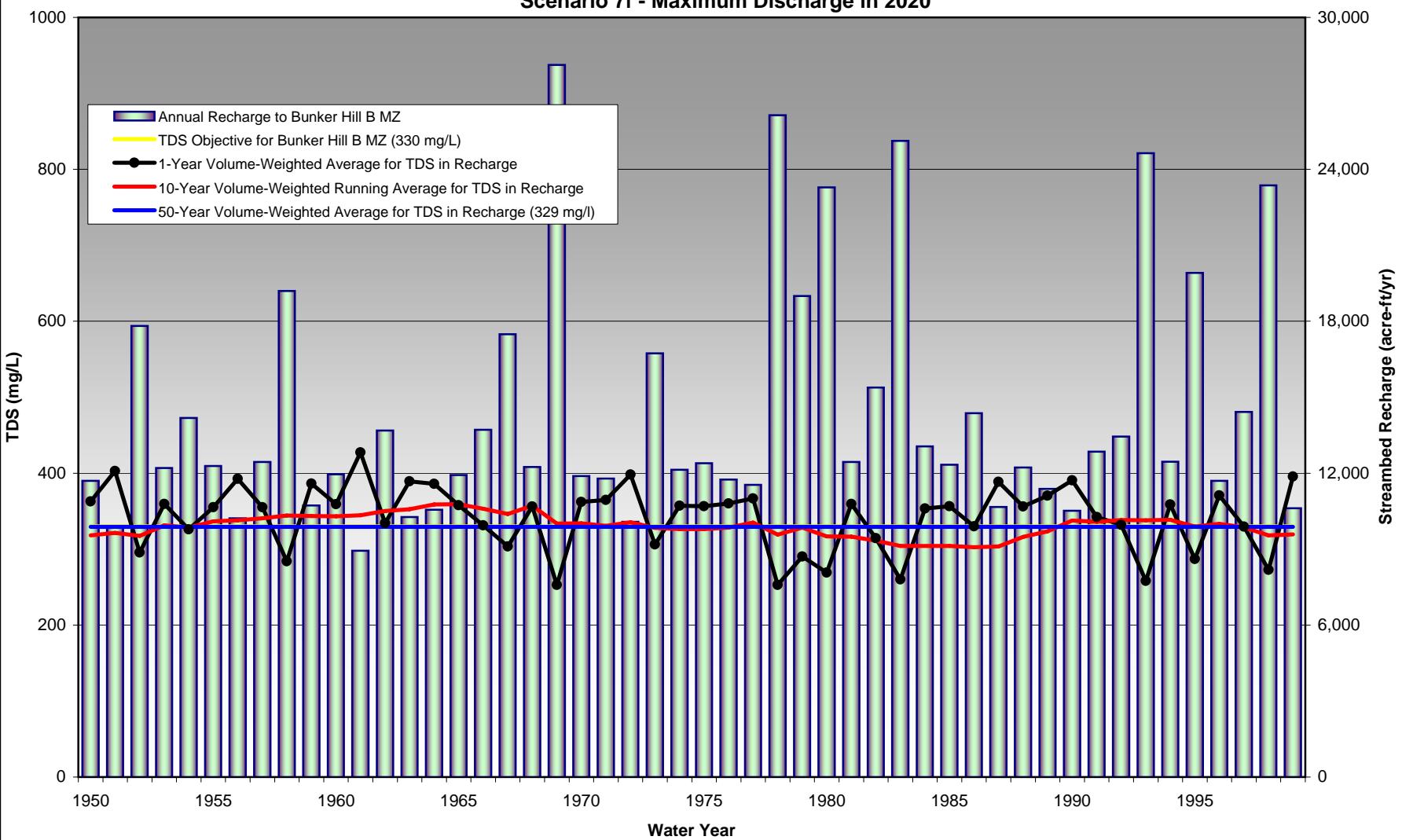


Figure 7f-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 7f - Maximum Discharge in 2020

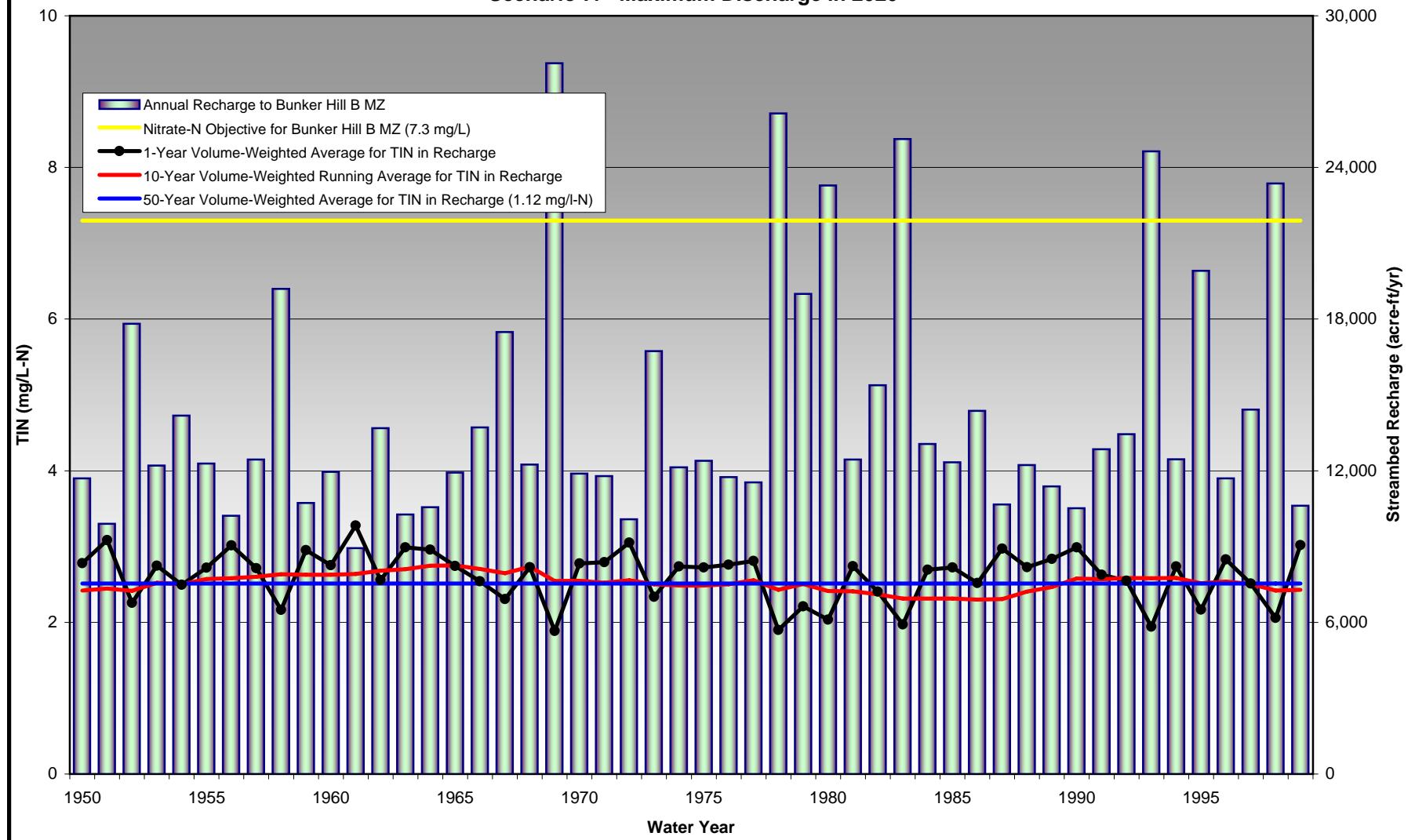


Table 7f-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 7f - Maximum Discharge in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	457	442	450	3.69	3.57	3.64
1951	502	446	450	4.05	3.61	3.64
1952	414	443	450	3.35	3.59	3.64
1953	472	456	450	3.81	3.69	3.64
1954	436	452	450	3.53	3.65	3.64
1955	469	458	450	3.78	3.70	3.64
1956	483	457	450	3.91	3.70	3.64
1957	471	460	450	3.80	3.72	3.64
1958	399	458	450	3.23	3.71	3.64
1959	489	456	450	3.95	3.69	3.64
1960	469	458	450	3.78	3.70	3.64
1961	506	458	450	4.09	3.70	3.64
1962	444	461	450	3.59	3.73	3.64
1963	485	463	450	3.92	3.74	3.64
1964	481	467	450	3.89	3.78	3.64
1965	461	466	450	3.72	3.77	3.64
1966	434	461	450	3.52	3.73	3.64
1967	424	456	450	3.44	3.69	3.64
1968	465	464	450	3.76	3.75	3.64
1969	380	452	450	3.08	3.65	3.64
1970	481	453	450	3.89	3.66	3.64
1971	482	451	450	3.89	3.65	3.64
1972	489	455	450	3.95	3.68	3.64
1973	425	449	450	3.43	3.63	3.64
1974	464	447	450	3.75	3.62	3.64
1975	464	448	450	3.74	3.62	3.64
1976	452	450	450	3.66	3.64	3.64
1977	472	454	450	3.81	3.67	3.64
1978	357	441	450	2.89	3.56	3.64
1979	414	445	450	3.34	3.60	3.64
1980	382	435	450	3.10	3.52	3.64
1981	484	435	450	3.91	3.52	3.64
1982	439	431	450	3.55	3.48	3.64
1983	379	425	450	3.06	3.44	3.64
1984	482	427	450	3.90	3.45	3.64
1985	471	427	450	3.80	3.46	3.64
1986	465	429	450	3.76	3.46	3.64
1987	500	431	450	4.04	3.48	3.64
1988	471	444	450	3.80	3.59	3.64
1989	489	451	450	3.95	3.65	3.64
1990	495	464	450	4.00	3.75	3.64
1991	447	460	450	3.62	3.72	3.64
1992	443	461	450	3.58	3.72	3.64
1993	365	459	450	2.96	3.71	3.64
1994	481	459	450	3.89	3.71	3.64
1995	414	452	450	3.35	3.66	3.64
1996	488	454	450	3.94	3.68	3.64
1997	445	449	450	3.60	3.64	3.64
1998	411	443	450	3.31	3.58	3.64
1999	514	445	450	4.15	3.60	3.64
Maximum	514	467		4.15	3.78	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 7f-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7f - Maximum Discharge in 2020

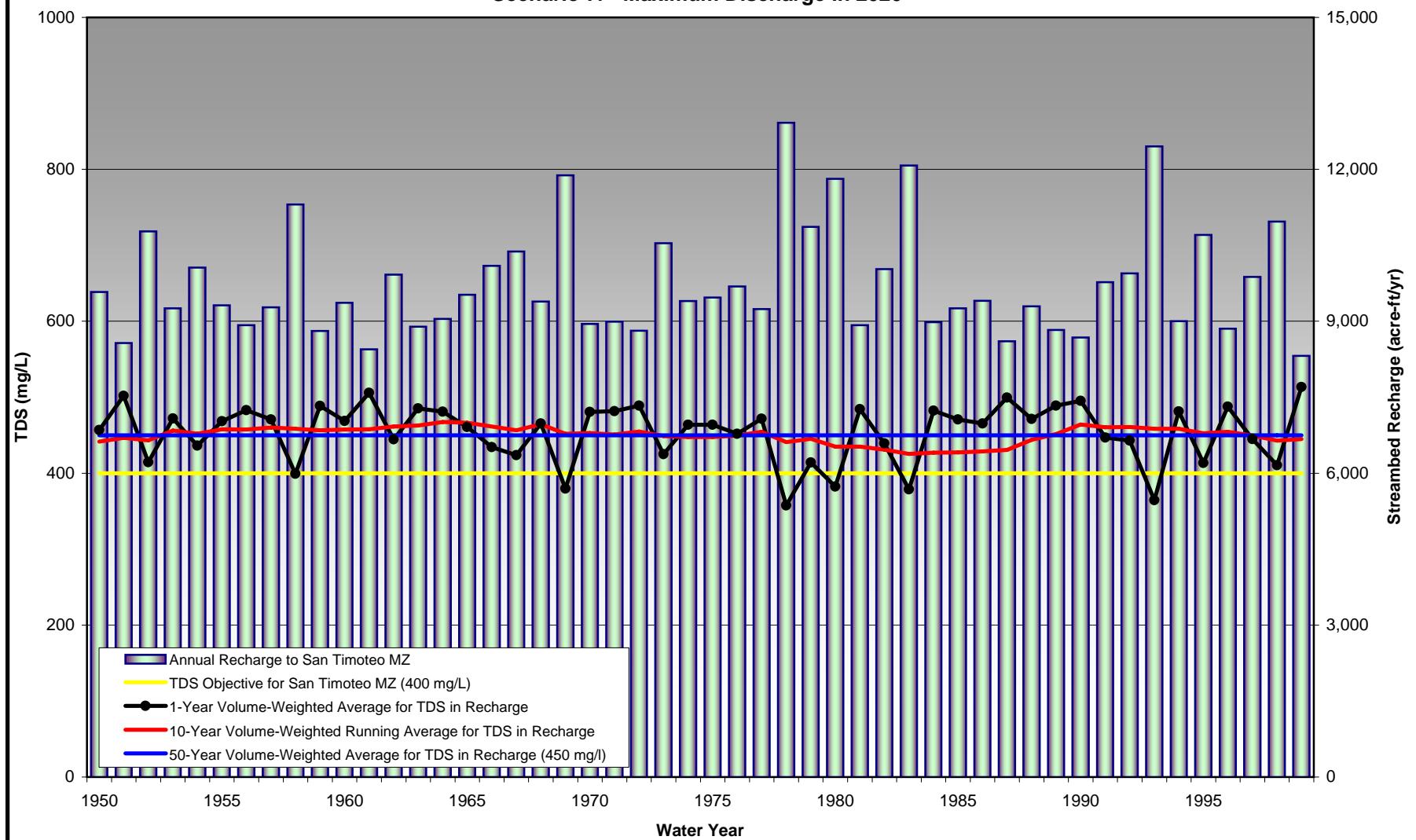


Figure 7f-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 7f - Maximum Discharge in 2020

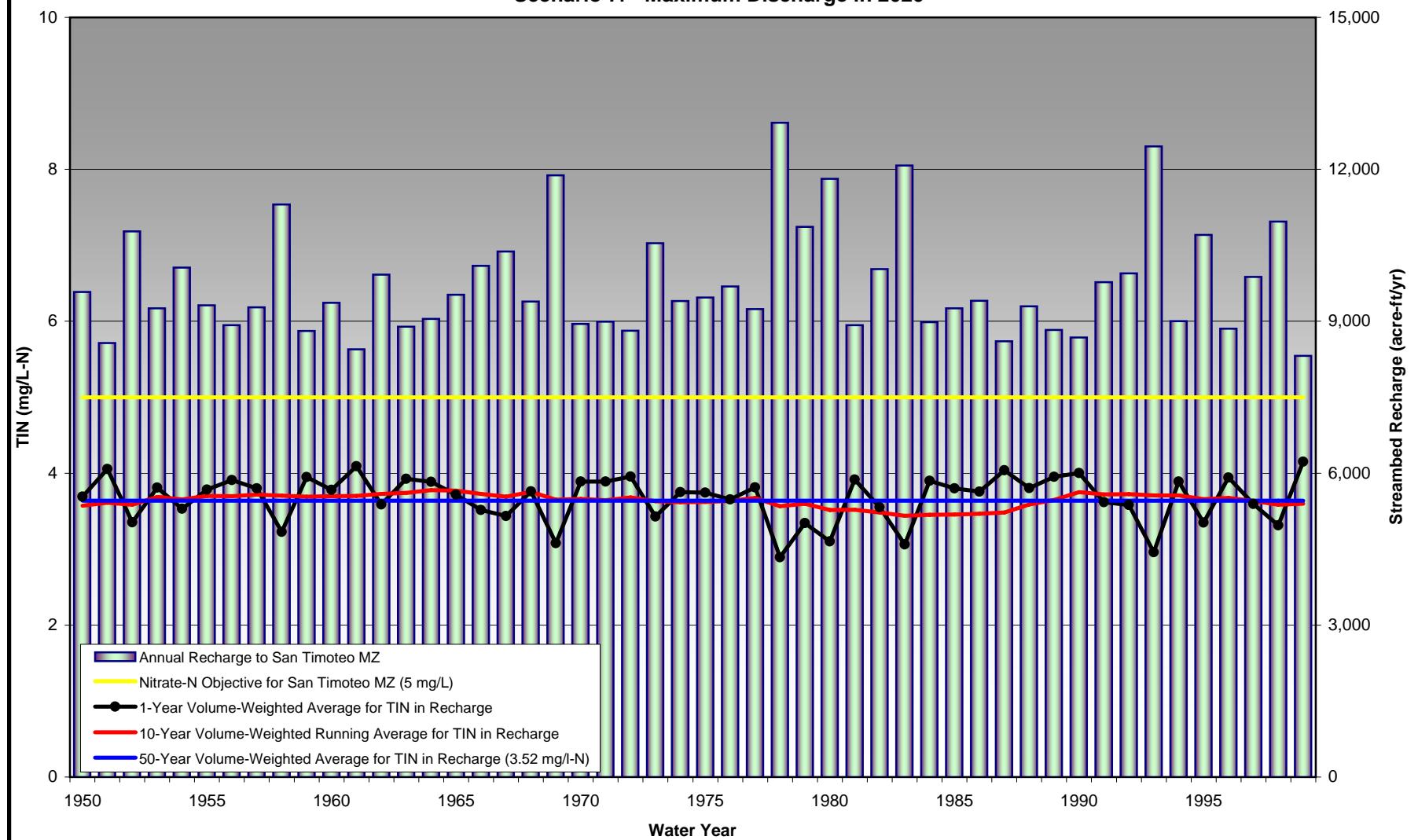


Table 7f-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 7f - Maximum Discharge in 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	50 Year	1 Year	10 Year	50 Year
1950	425	391	407	3.82	3.51	3.66
1951	477	398	407	4.30	3.58	3.66
1952	365	393	407	3.28	3.54	3.66
1953	459	414	407	4.13	3.72	3.66
1954	376	406	407	3.38	3.65	3.66
1955	446	419	407	4.01	3.77	3.66
1956	430	418	407	3.88	3.76	3.66
1957	444	423	407	3.99	3.80	3.66
1958	348	419	407	3.12	3.77	3.66
1959	461	418	407	4.15	3.75	3.66
1960	459	420	407	4.12	3.78	3.66
1961	480	421	407	4.33	3.78	3.66
1962	403	426	407	3.62	3.83	3.66
1963	453	425	407	4.07	3.82	3.66
1964	458	434	407	4.12	3.90	3.66
1965	425	432	407	3.81	3.88	3.66
1966	381	426	407	3.42	3.83	3.66
1967	356	416	407	3.20	3.74	3.66
1968	429	426	407	3.86	3.83	3.66
1969	309	407	407	2.78	3.66	3.66
1970	431	404	407	3.88	3.64	3.66
1971	445	402	407	4.01	3.61	3.66
1972	449	406	407	4.04	3.65	3.66
1973	407	402	407	3.65	3.61	3.66
1974	425	399	407	3.82	3.59	3.66
1975	437	400	407	3.93	3.60	3.66
1976	405	403	407	3.64	3.62	3.66
1977	448	413	407	4.03	3.71	3.66
1978	317	398	407	2.83	3.58	3.66
1979	377	409	407	3.38	3.67	3.66
1980	320	395	407	2.86	3.55	3.66
1981	466	396	407	4.19	3.56	3.66
1982	382	390	407	3.44	3.50	3.66
1983	321	380	407	2.87	3.41	3.66
1984	450	382	407	4.05	3.43	3.66
1985	441	382	407	3.96	3.43	3.66
1986	429	384	407	3.85	3.45	3.66
1987	475	386	407	4.27	3.46	3.66
1988	460	401	407	4.13	3.61	3.66
1989	467	410	407	4.21	3.68	3.66
1990	462	428	407	4.16	3.84	3.66
1991	389	420	407	3.50	3.78	3.66
1992	409	423	407	3.68	3.80	3.66
1993	296	418	407	2.66	3.76	3.66
1994	453	418	407	4.08	3.76	3.66
1995	337	406	407	3.03	3.65	3.66
1996	437	407	407	3.94	3.66	3.66
1997	400	401	407	3.59	3.60	3.66
1998	372	393	407	3.33	3.53	3.66
1999	483	394	407	4.35	3.54	3.66
Maximum	483	434		4.35	3.90	

Figure 7f-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7f - Maximum Discharge in 2020

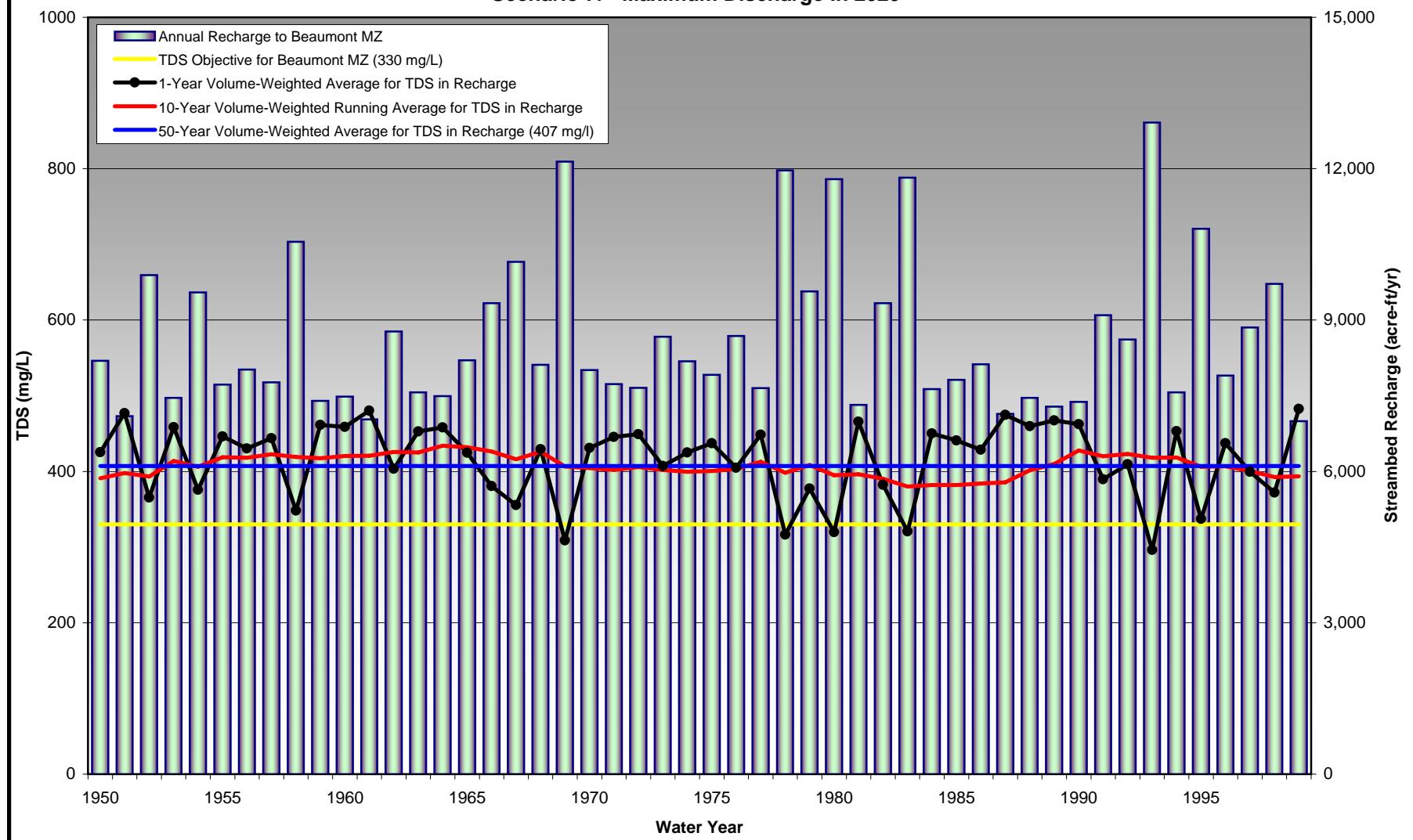
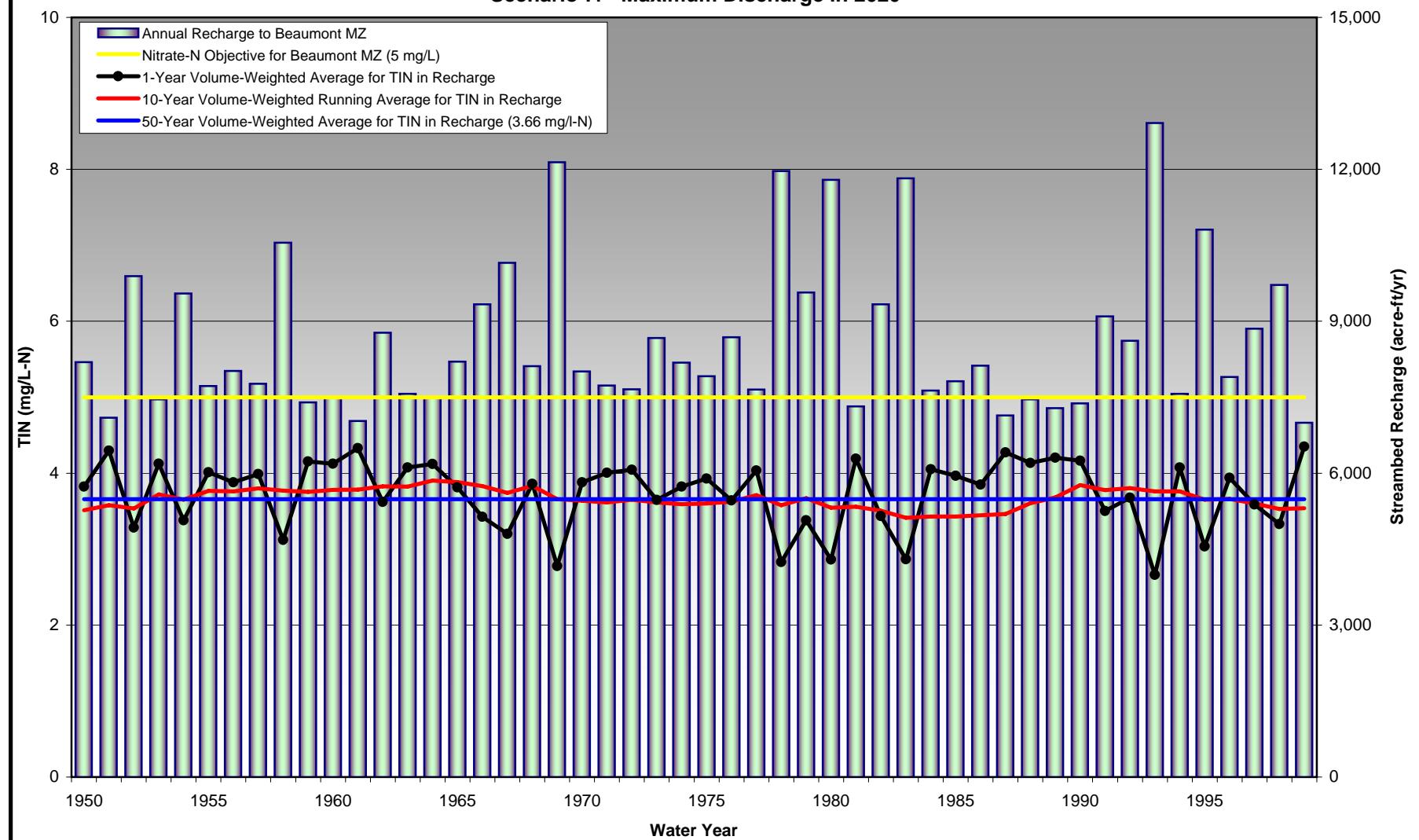


Figure 7f-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 7f - Maximum Discharge in 2020



B-1 SAWPA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 9	<p>Lines 354-357: <i>Once current ambient quality is estimated, the Regional Board may require the “maximum benefit” stakeholders to conduct an appropriate antidegradation analysis for San Timoteo for TDS (and possibly TIN depending on the current ambient quality in San Timoteo) before approving the wasteload allocation described by Scenarios 7.</i></p> <p>Comment: A few sentences describing what may be involved in conducting an antidegradation analysis would be helpful.</p>	<p>The Basin Plan lays out the general procedure for conducting an antidegradation analysis where assimilative capacity exists and the discharge (or streambed recharge, in this case) exceeds the current ambient quality. We quoted the Basin Plan earlier in the addendum. First, the discharger must “demonstrate whether and to what extent the proposed discharge would result in a lowering of ambient water quality in affected receiving waters. That is, to what extent, if any, would the discharge use available assimilative capacity.” We understand this to mean the performance of forward-projection modeling of groundwater quality in the management zone, with and without the proposed discharge. This would provide the Regional Board with a quantitative estimate of the trend in future groundwater quality, how the discharge would affect that trend, how much assimilative capacity the discharge would use over time, and whether or not the discharge would threaten beneficial uses in the future. With this information, the Regional Board can decide to allocate assimilative capacity and/or require further demonstrations such as “maximum benefit” and “best practical treatment and control.”</p> <p>Now, with specific regard to the San Timoteo MZ, currently there is no finding of assimilative capacity because of lack of current data. For discussion sake, let us assume that assimilative capacity exists. There have been “maximum benefit” arguments made by YVWD and Beaumont/STWMA which were accepted by the Regional Board and resulted in the “maximum benefit” groundwater quality objectives. But when these arguments were made, there was no knowledge of current ambient quality, so forward-projection modeling of water quality in the San</p>



SAWPA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
			Timoteo MZ was not performed (<i>i.e.</i> you need an initial condition in water-quality modeling). However, in these arguments, a simple salt-flux computation was performed which indicated that the “maximum benefit” commitments of YVWD and Beaumont/STWMA would keep ambient TDS quality in the San Timoteo MZ below the “maximum benefit” objectives. We speculate that the Regional Board may request that YVWD and Beaumont/STWMA either (1) update the salt-flux computation using current data and information or (2) perform forward-projection modeling to assure that implementation of the “maximum benefit” commitments will result in ambient TDS quality at or below the “maximum benefit” objectives. Again, these are speculations at this point. We recommend that the requirement and scope of any antidegradation analysis that the Regional Board may consider because of the results of Scenario 7 be discussed in the setting of a BMPTF meeting(s).
2	Page 9	<p><i>Line 392: Recommendations</i></p> <p>Comment: I would state up front that your recommendation is that the results of Scenario 7 be used and incorporated into a Basin Plan Amendment for the wasteload allocation before moving into discussions on the future work.</p>	<p>Agreed. Text updated as suggested. The text now reads:</p> <p><i>We have two very significant recommendations for the BMPTF:</i></p> <p><i>First, to incorporate the results and interpretations of Scenario 7 into a Basin Plan amendment to update the wasteload allocation for POTWs that discharge to the Santa Ana River or its tributaries.</i></p> <p><i>Second, to re-define the Santa Ana River surface water objectives for TDS and TIN at Prado Dam based on a technical demonstration of their protectiveness of</i></p>



SAWPA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
			<i>groundwater quality in the Orange County management zone.</i>
3	Page 10	<p>Lines 411-412: <i>Currently, the Regional Board assumes that the Reach 2 and Reach 3 objectives are protective of the Orange County management zone because of other diluent flows that recharge the Orange County management zone. However, there is not a compelling technical foundation for this assumption...</i></p> <p>Comment: I am disturbed by this statement and recommend revising this. It was a technically justifiable assumption supported and advocated by WE Inc. under the TIN TDS TF study and accepted by the Regional Board as part of the Basin Plan. I would view the proposed work as a potential need for further investigation rather than denigrating the previous assumption lacking technical...</p>	<p>Our position on this topic needs to be clarified. We have never asserted that there is a <i>conclusive</i> technical foundation for the protective nature of the Reach 2 and 3 objectives with respect to the new Orange County objective of 580 mg/L. Our recollection is that the N/TDS Task Force made a decision to not address the Prado objectives in the 2004 Basin Plan amendment, but that it may address the appropriateness of the objectives in the future. This decision was based, in part, on technical information and analysis performed during the N/TDS Study.</p> <p>We addressed the protective nature of the Reach 2 and 3 objectives in Section 6 of the N/TDS Study Phase 2A technical memorandum. In that section, we concluded that the Reach 2 and 3 objectives “seem” to be protective of the Orange County management zone with respect to its TDS objective of 580 mg/L, but there was not enough data to make this a conclusion.</p> <p>To address your comments and concerns we have modified this discussion in the addendum by revising this paragraph to read:</p> <p><i>Currently, the Regional Board assumes that the Reach 2 and Reach 3 objectives are protective of the Orange County management zone because of other diluent flows that recharge the Orange County management zone. This assumption is supported by the following empirical</i></p>



SAWPA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
			<p>evidence: (1) the TDS and total nitrogen concentrations of the Santa Ana River at Prado Dam have typically been at or below the Reach 2 and Reach 3 objectives since about 1978 and (2) the ambient TDS and nitrate-nitrogen concentrations of the Orange County management zone have not shown a significant trend of degradation since the historical time period that was used to set the groundwater quality objectives (1954-1973). However, we do not believe that this empirical evidence alone provides a conclusive technical foundation for the protective nature of the Reach 2 and 3 objectives with respect to the new Orange County management zone objectives for TDS and nitrate-nitrogen. We believe that additional analyses need to be performed to reach this conclusion, which will likely include data collection and computer-simulation modeling (discussed below).</p>



B-2 RWQCB COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 3	<p>Lines 109-110: <i>Each POTW has provided planning information for 2010 and 2020. The 2010 information is intended to be representative of conditions for the next cycle of NPDES permit renewals. The 2020 information is intended to be representative of conditions for the subsequent cycle of NPDES permit renewals.</i></p> <p>Comment: WEI talks about the 'next' cycle of NPDES permit renewals and the 'subsequent' cycle. Those are really vague. Can they say that the 2010 simulations should be applicable to any NPDES issued or renewed up to 2012(?) and after that the 2020 WLA should be used.</p>	<p>In our section on <i>Recommendations</i> (see Table 5), we provide a range of discharge that was simulated in our analysis of Scenario 7 that includes both 2010 and 2020 planning conditions. We believe the following is the appropriate way to interpret and use the WLAM results for Scenario 7: the Regional Board should be able to permit POTW discharges within this range over the next 10 years, unless other conditions/events suggest that the WLA should be revisited. We have revised the text to clarify our intended recommendations:</p> <p><i>Planning information acquired from all the POTWs forms the basis for Scenario 7, and is shown in Table 1. Each POTW has provided planning information for 2010 and 2020. The planning information is intended to represent a range of expected POTW behavior over the next 10 years, which may span two or more cycles of NPDES permit renewals.</i></p>
2	Page 5	<p>Lines 208-210: <i>The main purpose of the TDS and nitrate-nitrogen objectives for groundwater is to protect the beneficial uses of the management zones—the most sensitive use typically being municipal drinking water supply (MUN).</i></p> <p>Comment: I agree partially with WEI's statement here, but technically most of the GW WQOs were established based on ensuring compliance with the anti-degradation policy. Otherwise all GW basins would be at 10 mg/L NO₃-N and 1000 mg/L TDS. At the same time, we did ensure that all WQOs also ensure protection of beneficial uses.</p>	<p>Agreed. Text updated as suggested. The paragraph now reads:</p> <p><i>The TDS and nitrate-nitrogen objectives for the groundwater management zones were based on an analysis of historical groundwater quality in order to comply with the State's Antidegradation Policy (SWRCB Resolution 68-16). At the same time, the objectives were reviewed to ensure that they were protective of beneficial uses—the most sensitive use typically being municipal drinking water supply (MUN).</i></p>
3	Page 9	Line 392: <i>Recommendations</i>	Comment noted.



RWQCB COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
		Comment: I agree with WEI's recommendations. The TF should evaluate if the 650 and 700 mg/L WQOs at Prado are protective of the 580 mg/L at OC MZ. I wonder if a Reach 2 NO3-N WQO should also be established - I'll have to think about that some more.	



B-3 OCWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 4	<p>Lines 159-167: <i>The compliance metrics for surface water are based on the monitoring programs and methods that the Regional Board uses to determine compliance with the Reach 2 and Reach 3 objectives for the Santa Ana River at Prado Dam (i.e. at the surface water monitoring station at Below Prado). The compliance metric for groundwater is based on a 10-year volume-weighted running average of TDS and TIN in the streambed recharge to the groundwater management zones. The maximum of this 10-year running average over the 50-year simulation is the compliance metric. The compliance metric for groundwater was agreed upon by the BMPTF and the Regional Board at the BMPTF meeting on December __, 2009.</i></p> <p>Comment:</p> <p>It would be helpful to provide more description in this section – explain more what is meant by ‘compliance metric.’</p>	<p>The draft text did not accurately describe the definition of the compliance metric. The text has been revised to read as follows:</p> <p><i>In Tables 3 and 4, the model results are summarized by the compliance metric for the surface water and groundwater bodies that are affected by POTW discharge. In these tables, the compliance metric is the method the BMPTF uses to summarize the results of the WLAM for comparison to the relevant water quality objectives and the current estimates of ambient quality. For example, the TDS objective for Reach 3 of the Santa Ana River is 700 mg/L as measured by laboratory analysis of grab samples of total flow at Below Prado during the month of August. The WLAM generates daily estimates of flow and quality at Prado Dam. These daily estimates were used to compute a monthly volume-weighted average of TDS for each August over the 50-year simulation. The maximum of the 50 monthly averages for TDS is the compliance metric. This compliance metric for Reach 3 was computed for all six simulations of Scenario 7 and the results are listed in Table 3.</i></p>
2	Page 10	<p>Lines 418-424: <i>The WLAM results for TDS (see Table 3) indicate that for all simulations of Scenario 7, the TDS concentration of the Santa Ana River at Prado Dam (547–569 mg/L) will be lower than both the Reach 2 objective (650 mg/L) and the TDS objective of the Orange County management zone (580 mg/L). These model results indicate that the TDS wasteload allocation for POTWs upstream of Prado Dam could be relaxed to some degree and still comply with the TDS objectives in the Orange. This has led some POTWs to request that the Regional Board consider such</i></p>	<p>We agree with both comments. Reference to the objectives for the Orange County management zone has been deleted. The need for “scalping” storm flows that do not recharge the Orange County management zone is discussed later in the addendum. The paragraph has been revised to read as follows:</p> <p><i>The WLAM results for TDS (see Table 3) indicate that for all simulations of Scenario 7 the TDS compliance metrics for Reach 2 of the Santa Ana River (547–569 mg/L) are lower</i></p>



OCWD COMMENTS AND RESPONSES

		<p><i>TDS relaxation in the wasteload allocation.</i></p> <p>Comments:</p> <ol style="list-style-type: none"> 1. If there is a comparison of the WLAM results for TDS to the OC management zone TDS, then the results need to be scalped to account for water that does not recharge the OC Management Zone; it is not a valid comparison unless this scalping is done. 2. Add sentence to end of paragraph: However, OCWD staff has raised concerns about relaxing TDS concentrations in the wasteload allocation given that there is no assimilative capacity for TDS in the OC management zone. 	<p><i>than the Reach 2 objective (650 mg/L). These model results suggest that the TDS wasteload allocation for POTWs upstream of Prado Dam could be relaxed to some degree and still comply with the TDS objective for Reach 2. This has led some POTWs to request that the Regional Board consider such TDS relaxation in the wasteload allocation. However, OCWD staff has raised concerns about relaxing TDS concentrations in the wasteload allocation given that there is no assimilative capacity for TDS in the Orange County management zone.</i></p>
3	Page 11	<p><i>Lines 445-459: This BMPTF effort will have to account for the following:</i></p> <ol style="list-style-type: none"> 1. <i>Not all of the Santa Ana River flows that pass Prado Dam are recharged in the Orange County management zone. Some of these flows, especially during and after large storm events, are “lost” to the ocean. These “lost” flows, and their associated quality, should be subtracted from any estimate of recharge in Orange County.</i> 2. <i>There are other tributary flows that enter the Santa Ana River downstream of Prado Dam before being recharged to the Orange County management zone. However, very little water-quality data exists for these flows. A monitoring program should be designed and implemented to estimate the TDS and</i> 	<p>We have added the suggested bullet to the text to read as follows:</p> <ol style="list-style-type: none"> 3. <i>Other inflows affect TDS and nitrate concentrations in the Orange County management zone. These other inflows include flow from Santiago Creek and subsurface inflow. If and how these other inflows are accounted for should be discussed and evaluated by the BMPTF.</i>



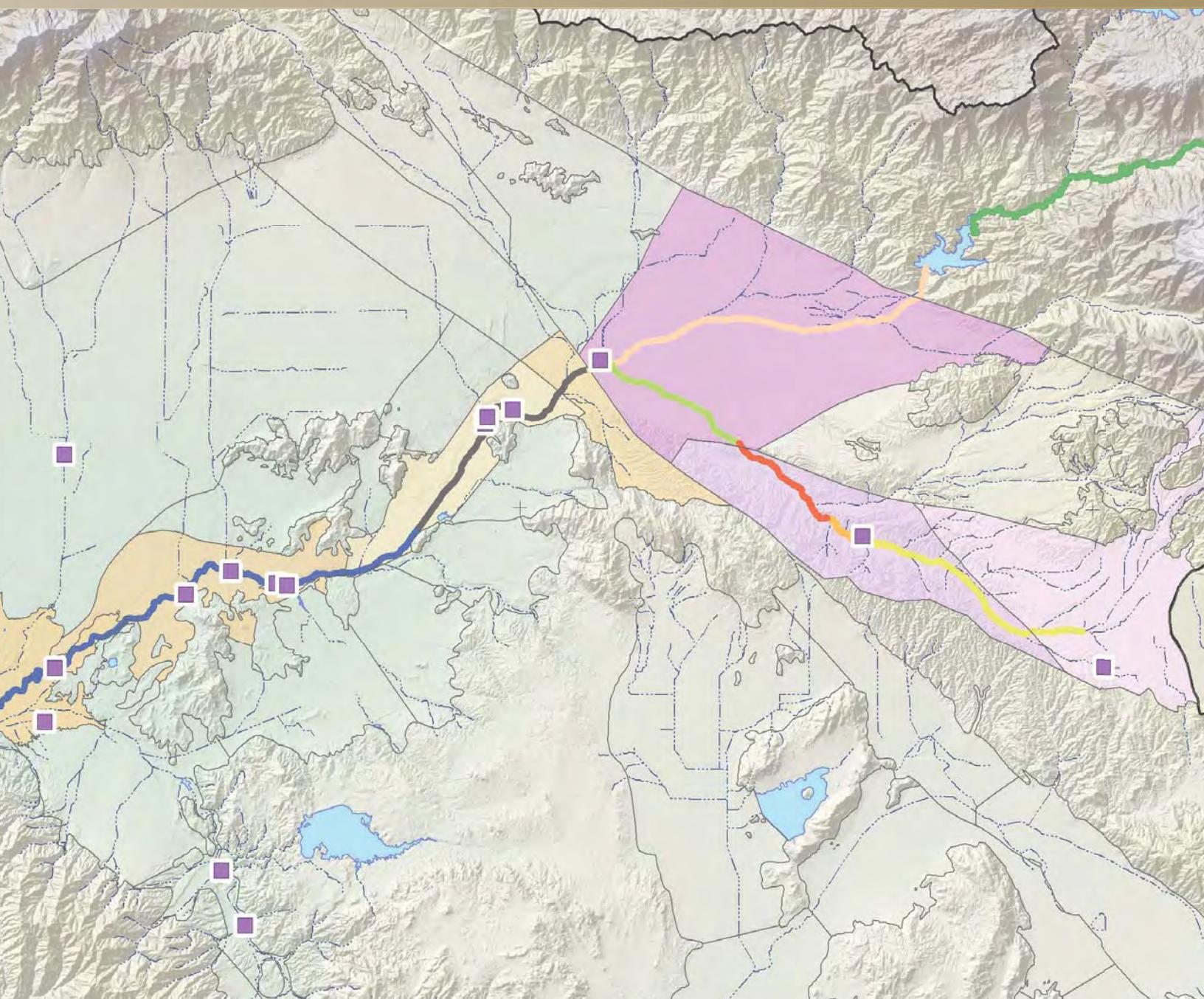
OCWD COMMENTS AND RESPONSES

		<p><i>TIN concentrations in these other tributary flows.</i></p> <p>3. <i>Computer-simulation modeling will be an important component of this effort. As has been discussed at prior BMPTF meetings, the WLAM and OCWD's newly-developed recharge facilities model will need to be used to estimate the volume-weighted TDS and TIN of Santa Ana River recharge to the Orange County management zone.</i></p> <p>Comments:</p> <p><i>Add bullet: It should also be noted that other inflows affect TDS and nitrate concentrations in the OC Management Zone. These other inflows to the OC Management Zone include flow from Santiago Creek and subsurface inflow. The manner in which these other inflows are accounted for would need to be evaluated.</i></p>	
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